



ARIZONA MILITARY

REGIONAL COMPATIBILITY PROJECT



WESTERN MARICOPA COUNTY / LUKE AIR FORCE BASE

REGIONAL COMPATIBILITY PLAN

MARCH 2003



TABLE OF CONTENTS

1	INTRODUCTION	1-1
1.1	Project Purpose	1-1
1.2	Project Goals.....	1-2
1.3	Guiding Principles	1-2
1.4	Public Participation.....	1-3
1.5	Plan Implementation.....	1-3
2	PLANNING AREA OVERVIEW	2-1
2.1	Location and Jurisdictions	2-1
2.2	Historical Growth and Development	2-4
2.3	Existing Development Pattern	2-5
2.4	Growth Potential and Planned Land Use (Municipal and County)	2-6
2.5	Airspace.....	2-7
2.6	Luke Air Force Base Operations	2-9
2.7	Land Ownership	2-12
3	LAND USE COMPATIBILITY LAWS	3-1
3.1	Federal	3-1
3.2	State	3-1
3.3	Local	3-2
3.4	Compliance with Land Use Compatibility Laws.....	3-2
3.5	Differences Between Land Use Compatibility Laws / Programs	3-4
4	TRENDS AND ISSUES.....	4-1
4.1	Trends	4-1
4.2	Issues	4-5
5	COMPATIBLE LAND USE	5-1
5.1	Compatible Land Use	5-1
5.2	Compatible Land Use Plan.....	5-3
6	IMPLEMENTATION PROGRAM	6-1
6.1	Introduction	6-1
6.2	Implementation Strategies	6-1



LIST OF FIGURES

Figure 2-1: Vicinity Box.....	2-2
Figure 2-2: Existing Land Use.....	2-3
Figure 2-3: Overflight Area.....	2-11
Figure 2-4: Land Ownership.....	2-13
Figure 3-1: Inconsistent Land Use.....	3-3
Figure 5-1: Compatible Land Use Plan.....	5-4
Figure 6-1: West Valley Compatibility Notification Area.....	6-7



LIST OF TABLES

Table 2-1: 2002 Population.....	2-5
Table 2-2: Projected Build-Out Population.....	2-7
Table 3-1: Compatibility of Uses – AICUZ Program.....	3-5
Table 3-2: Compatibility of Uses – ARS §28-8481.....	3-5
Table 4-1: Growth of Sample East Valley Cities.....	4-3
Table 4-2: Growth of Sample West Valley Cities.....	4-4
Table 5-1: Compatible Land Uses.....	5-2



LIST OF APPENDICES

Appendix A:	Contributors
Appendix B:	West Valley Study Area General Plan Review
Appendix C:	Phoenix Area Airports
Appendix D:	Air Installation Compatible Use Zone (AICUZ) Table
Appendix E:	State and Local Land Use Compatibility Regulation Review
Appendix F:	Bibliography of Noise Research
Appendix G:	Noise Impact Tables
Appendix H:	Purchase of Essential Land and Development Rights
Appendix I:	Model Ordinance for Development Review Process
Appendix J:	Bibliography of Documents Reviewed



1 INTRODUCTION

Development of incompatible land uses in the vicinity of Arizona's military facilities constrains their ability to perform current and future missions. These incompatible uses expose people to safety and noise effects ranging from nuisance to physical harm. In response to these compatibility issues, state legislation amending Title 28, Article 7, Airport Zoning & Regulation (ARS §28-8480, §28-8481 and §28-8482) addressed the control of impacts generated by military airport operations on public health and safety, particularly in high noise or accident potential zones (APZs). The focus of that legislation was to mandate that areas within those zones be addressed in municipal general plans and county comprehensive plans, and to ensure that land development in the vicinity of a military airport be compatible with the high noise and accident potential generated by military airport operations. That legislation provides the chief guiding principles for this Compatibility Plan.

The State of Arizona, through amendments to existing law, including ARS §9-461.05, §9-461.06, §9-462.04, enacted Growing Smarter and Growing Smarter Plus measures that address growth and land development issues through changes in the community planning and rezoning processes. These measures require political jurisdictions with property within territory in the vicinity of a military airport, as defined in ARS §28-8461, to include consideration of military airport operations in their General Plans and to allow an opportunity for official comment by the military airport officials on the General Plans. The Growing Smarter and Growing Smarter Plus legislation requires that plans provide for a rational pattern of land development and an extensive public participation program. Compliance with these Growing Smarter and Growing Smarter Plus elements also served as a key guiding principle in the preparation of this Compatibility Plan.

The U.S. Department of Defense has created the Air Installation Compatible Use Zone (AICUZ) Program to assist communities around military airports in planning for compatible land use. Elements from this national program were also integrated into the principles that guided this Plan.

The Arizona Military Regional Compatibility Project is a statewide effort that identifies solutions to land use compatibility issues around active military airports and installations. The program is managed by the Arizona Department of Commerce (ADOC) Community Planning Office, and this Plan is the first to be prepared under the program.

This Compatibility Plan has been developed through a collaborative effort that included two regional open houses, interest group workshops, participation in group meetings, individual meetings, and correspondence.

1.1 PROJECT PURPOSE

The purpose of the Western Maricopa County / Luke Air Force Base Regional Compatibility Project is to facilitate the implementation of compatible land uses around Luke AFB through a cooperative coordinated program among the affected jurisdictions in Maricopa County that have the authority and responsibility to implement land uses for their communities. The Project is intended to serve as a means to convene the interested and affected parties (including jurisdictions, corporations and individuals), function as a clearinghouse for data collection to ensure consistency, and develop highly focused and achievable implementation strategies in a collaborative effort.

To ensure that the land use decisions are logical and consistent, the planning process needs to encompass all twelve jurisdictions in the Western Maricopa County that regulate development around Luke AFB, including seven cities, two towns, Maricopa County, the State, and the Base itself.

1.2 PROJECT GOALS

To accomplish the purpose, the goals of this Project are:

- Compile existing plans and studies to identify data needs and points of agreement or conflict
- Consult with landowners, residents, governmental jurisdictions (including special districts), and other interested parties concerning development issues in the West Valley as they affect Luke AFB and seek their input
- Identify compatible uses of land within the high noise (65 day-night level [dnl] noise contour and higher), APZs, overflight area, and live ordnance departure routes surrounding Luke AFB
- Develop a strong implementation plan, including appropriate financing mechanisms for development rights compensation

As the Project Team met with the jurisdictions, residents, landowners, and other stakeholders, several issues emerged as primary concerns.

- National Security – Preserve Luke AFB’s military mission
- Safety – Particularly within APZs and in consideration of live ordnance flights from Luke AFB via the Range Access Routes
- Public Health and Welfare – Land use compatibility and noise mitigation strategies
- Property Rights – Compensation in areas where land use compatibility is an issue
- Appropriate Mitigation Strategies – Sustaining the economic benefits associated with Luke AFB while mitigating negative impacts
- Implementation Strategies – Identifying and applying appropriate funding mechanisms and joint intervention techniques

1.3 GUIDING PRINCIPLES

A number of guiding principles were incorporated by the Team as the foundation of the planning process. These principles apply to each element and phase of the process.

- Create feasible and sustainable solutions that are consistent with Title 28, Article 7, Airport Zoning and Regulation and the Growing Smarter and Growing Smarter Plus legislation
- Areas within the vicinity of military airports must be addressed in municipal general plans and county comprehensive plans to ensure development is compatible with the high noise and accident potential generated by military airport operations, as defined under Title 28
- Ensure openness to varying viewpoints throughout the process

- Focus on fair and equitable solutions for all impacted parties
- Establish, maintain, and enhance consistency and continuity in the decision-making process
- Achieve consent on the means to control encroachment
- Devise compatible land use solutions that accommodate urban development while preserving Luke AFB's military mission

1.4 PUBLIC PARTICIPATION

The public participation program provided meaningful opportunities for interested parties to contribute to shaping the outcome of the Compatibility Project while it permitted the ADOC to guide the direction of the public outreach process. The vision for public participation was that no one interest dominated the public process but that all segments in the affected area and all other interested parties had access to frequent and timely progress reports, meaningful and convenient methods of participation, and timely access to draft documents in advance of public meetings.

To achieve this vision, the public participation strategy consisted of a variety of communication components and outlets:

- Posting applicable public information on the Arizona Department of Commerce (www.azcommerce.com) and Luke AFB (www.lukeaf.mil) websites
- Distributing project information to a mailing list of more than 450 community organizations, agencies, and individuals via monthly bulletins, e-mail notices, and direct mailings
- Obtaining local media coverage of Compatibility Project achievements, milestones and events through distribution of press releases, public service announcements, and radio interviews
- Participating with key constituent groups, community organizations, Luke AFB representatives, and local political jurisdictions to obtain further input through direct contacts, interviews, and numerous meetings
- Conducting two regional Open Houses to provide residents and stakeholders an opportunity to receive information on issues and to provide input and comments in a comfortable environment. Together, these Open Houses had over 600 participants
- Scheduling interest group meetings to facilitate dialogue with the public in reaching consent
- Distributing documents in hard copy and Adobe PDF (Portable Document Format) via the internet, email list, and compact discs
- Maintaining a public comment / response database

1.5 PLAN IMPLEMENTATION

The Regional Compatibility Plan is the foundation for future actions by local political jurisdictions in the West Valley with respect to controlling urban land use compatibility in the area affected by Luke AFB operations. The Plan is designed to be implemented at several levels, including actions by the State and individual political jurisdictions, as well multiple local

jurisdictions cooperating together. The following strategies, which are described in more detail in Chapter 6, are key elements in implementing the Plan:

- Measures to compensate landowners for property found to be incompatible with preserving the mission of Luke AFB should be developed simultaneously with or, if possible, prior to the application of regulations to control or to limit land use and development around the Base
- In order to control the future of Luke's mission, the Department of Defense should purchase and retain critical areas around the Base, especially the Clear Zone and the area around the munitions storage area. Roadways that intrude into the Clear Zone should be relocated
- Owing to financial considerations, land acquisition must be reserved for areas and uses that cannot be made compatible through other means. Purchase of all lands in the Clear Zones and the APZs should be considered as a means to control uses in these areas
- Local political jurisdictions can create incentives for developers to reduce the intensity and density of use in areas identified as significant to preserving the Base's mission while increasing density in other areas by encouraging the purchase of development rights in appropriate situations and areas
- Jurisdictions should pass resolutions that support and affirm the conclusions of the Regional Compatibility Plan and accept the implementation elements
- Luke AFB should issue a formal statement that supports the Regional Compatibility Plan and affirms its commitment of working cooperatively with the affected local jurisdictions
- Local jurisdictions should review their internal actions in terms of consistency with the Regional Compatibility Plan
- A Joint Memorandum of Agreement should be issued by Luke AFB, the State, and affected jurisdictions defining the land use compatibility issues and agreeing to resolve them through mutually acceptable techniques



2 PLANNING AREA OVERVIEW

Chapter 2 presents an overview of the West Valley planning area. It identifies the major political jurisdictions in the vicinity of Luke AFB and briefly describes the area's historical growth and development, as well as current development trends. The territory in the vicinity of Luke AFB, referred to as the Vicinity Box throughout the Regional Compatibility Plan, is defined in Arizona legislation, (Figure 2-1 – Vicinity Box) and is the primary focus in the area studied in the planning process. This chapter evaluates the growth potential for each of the West Valley jurisdictions, and presents the results of a review of the General Plans in the West Valley to determine the Conditions, Goals, Policies, Objectives and other planning recommendations that directly or indirectly impact land use compatibility with the operations and the military mission of Luke AFB. The last sections of this Chapter address airspace considerations; the military operations at Luke AFB; the four principal classifications of land ownership in the West Valley: federal, state, county / municipal, and private; and economic development issues.

2.1 LOCATION AND JURISDICTIONS

The area included as part for study in the Western Maricopa Regional Compatibility Plan is Maricopa County's West Valley (Figure 2-2 – Existing Land Use Map). The area extends north from the Gila River to approximately ten miles south of State Route 74, and west from the Phoenix city limits to the western slopes of the White Tank Mountains. All or portions of the following municipalities are within the Compatibility Plan study area:

- City of Avondale
- Town of Buckeye
- City of El Mirage
- City of Glendale
- City of Goodyear
- City of Litchfield Park
- City of Peoria
- City of Surprise
- Town of Youngtown

Also included in the Plan's study area are portions of northern and western Maricopa County and all or parts of the unincorporated communities of Sun City, Sun City West, Wittmann, and Circle City.

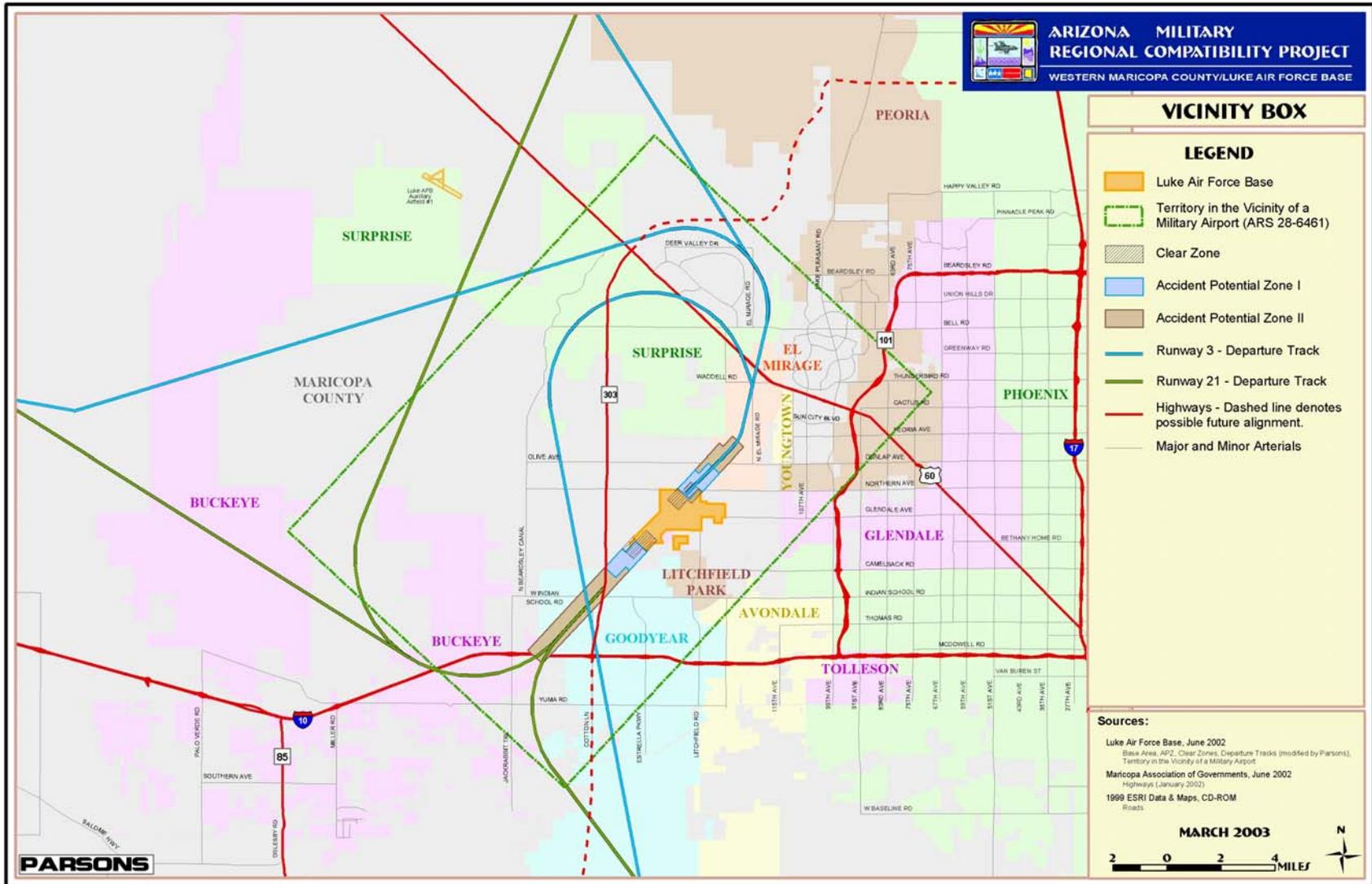


Figure 2-1: Vicinity Box

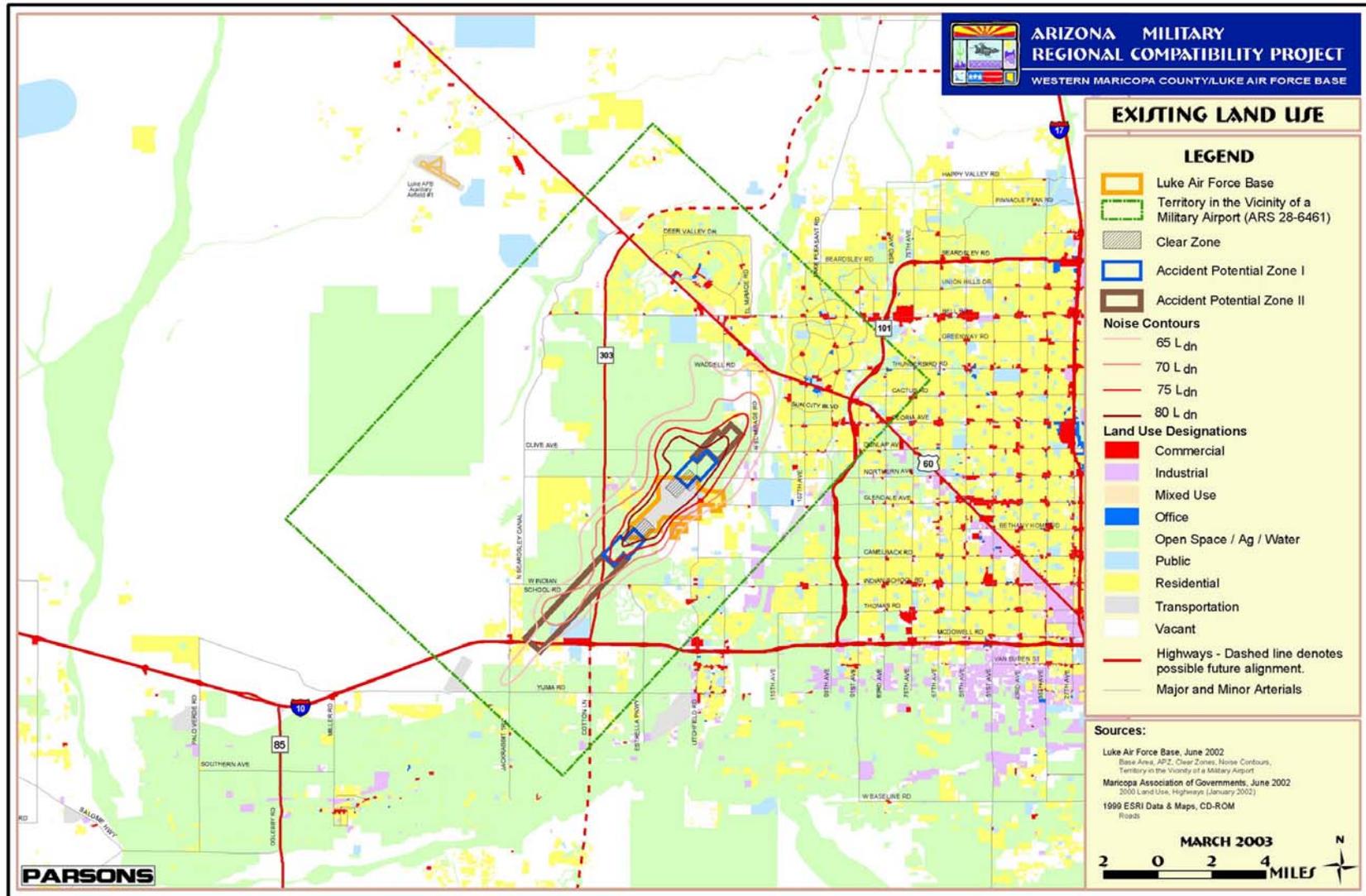


Figure 2-2: Existing Land Use

2.2 HISTORICAL GROWTH AND DEVELOPMENT

2.2.1 Pre-1940

The first Anglo-American settlers arrived in the West Valley during the 1820s. However, the single event that transformed the West Valley into a well-traveled route used by gold prospectors and settlers alike was the California gold rush of the mid-1800s. It is estimated that by 1851 more than 60,000 people had passed through the Gila River Valley and adjacent areas on their journey to the California gold fields.

On March 3, 1877, the Desert Land Act was passed by the U.S. Congress to encourage and promote economic development of the arid and semiarid public lands of the Western United States. The Act permitted settlers to obtain title to 640 acres of those public lands identified as arid and semiarid if they agreed to reclaim, irrigate, and cultivate the property within three years.

By the 1890s, more than 100,000 acres of desert in the Salt and Gila River valleys had been irrigated, which attracted more settlers to the region. By the end of the 19th Century, Anglo settlement had increased due to the expanded presence of the U.S. Army, continued development of large-scale irrigation, the discovery of high-grade mineral deposits in nearby areas, and the opening of the railroad. Settlement occurred in Buckeye as early as 1885, Peoria in 1888, and Glendale in 1892.

Irrigation and agriculture production accelerated with the completion of Roosevelt Dam in 1911 and the entry of Arizona into the Union in 1912. Roosevelt Dam along with Waddell Dam, completed in 1927, successfully harnessed the Salt and Agua Fria Rivers, creating two new water sources for large-scale irrigation projects.

After World War I, a number of settlements in the West Valley began to develop separate identities. Many of the workers involved in local cotton production gravitated to areas that fairly quickly became known as Litchfield Park, Surprise, El Mirage, Goodyear, Avondale, and Tolleson.

Additional settlement was spurred by the construction of Grand Avenue between Phoenix and Wickenburg as well as the construction of the Atchison, Topeka, and Santa Fe Railroad along Grand Avenue, linking Phoenix to Wickenburg and beyond. As growth from Phoenix spread to the northwest, settlers from Peoria, Illinois, settled on the south bank of the New River bringing with them the current name of that Salt River Valley community.

2.2.2 Post-1940

In 1941, the U.S. Army selected a 1,440-acre site located in the center of the West Valley for a new military installation, Luke Army Airfield. Although the Base was decommissioned in 1946, at the end of the World War II, in its five years of operation over 12,000 fighter pilots had been trained there. The Army Airfield was reactivated as an Air Force Base in 1951 and has been involved in training U.S. and Allied pilots and operations and maintenance staff since that time.

The post-World War II period brought many changes in land use patterns throughout the West Valley. Low-cost land and industrial decentralization attracted the electronics, aluminum, and aerospace industries to the region and industrial development brought with it rising numbers of employees, many of whom desired housing located in nearby areas. As a result, agriculture began to be replaced by residential development. The area's pleasant climate and the ever-increasing use of air conditioning made the West Valley attractive to retirees, and retirement

communities soon became part of the region’s growth pattern. After Youngtown was founded in the 1950s as a retirement community, the development of Sun City as a large-scale planned community began in 1959.

Retail and service-related businesses followed the increasing population. In addition, office developers and distribution-related firms either moved from central Phoenix to the western suburbs or established additional facilities in those areas. Completion of the Central Arizona Project, Interstate 10, State Route 101 and other major roadways also had significant impacts on population growth and economic development in the West Valley as individuals, families and businesses were able to move farther away from Phoenix’s central core, creating clustered development, satellite cities and numerous master planned communities. In 2002, the Maricopa Association of Governments (MAG) estimated the population of incorporated municipalities in the vicinity of Luke AFB at 574,535 (Table 2-1).

Table 2-1: 2002 Population

City	Population
Avondale	47,610
Buckeye	11,955
El Mirage	20,645
Glendale	227,495
Goodyear	26,715
Litchfield Park	3,850
Peoria	122,655
Surprise	45,125
Youngtown	3,295
Unincorporated Sun City ¹	38,670
Unincorporated Sun City West	26,520
Total	574,535

Source: MAG Estimates, 2002: note projections are based upon Municipal Planning Area (MPA) Boundaries. An MPA is defined by MAG as the current corporate limits, plus area outside that is anticipated to become a part of the corporate limits at sometime in the future. For some cities, for example, Buckeye, the MPA boundaries may be twice as large as the corporate limits. Therefore, in computing growth rates, it would not be correct to take an estimate by corporate limit and a projection by MPA boundary.

2.3 EXISTING DEVELOPMENT PATTERN

The West Valley experienced relatively slow population growth for many decades as the land was converted from uninhabited Sonoran Desert to large scale and intensive agricultural uses. But the construction and operation of Luke Army Airfield during World War II marked the beginning of a major transformation in the character of development in the area as the previously small communities began growing and became residential alternatives to the more urbanized City of Phoenix and its surroundings. These growth pressures slowly intensified, then accelerated in scope and character over the past three decades. Today, most of the West Valley is in transition from rural and agricultural uses to urban / suburban uses, especially single-family residential development and associated retail and service uses.

¹ Only two unincorporated areas (Sun City and Sun City West) of western Maricopa County are included in the above population estimate.

However, the transition from rural to urban/suburban has not been uniform across the West Valley. The part of the West Valley that lies east of Luke AFB has largely completed that transformation and is relatively well urbanized, with few large tracts of undeveloped land. Land north and west of the Base is less urbanized but the pressure to develop it is increasing rapidly as demand for residential uses rise (Figure 2-2 – Existing Land Use).

Generally, existing land uses and the development patterns within the West Valley can be characterized as follows.

- The northeastern part of the West Valley is well urbanized, with few large undeveloped areas and a wide range of residential, retail and business functions and some open space use. This area includes relatively densely settled portions of the cities of Peoria and El Mirage, Town of Youngtown, and the unincorporated communities of Sun City and Sun City West.
- The northwestern part of the West Valley is partly urbanized, especially areas within the City of Surprise. Much of the area is developed at relatively low suburban type population densities. Currently undeveloped areas to the north and northwest of the City of Surprise are planned for mixed-uses and are developing rapidly.
- The central part of the West Valley east of Luke AFB is well urbanized and nearly fully developed, with a wide range of residential, retail and business functions. This area includes relatively densely settled portions of the cities of Litchfield Park, Glendale, and Peoria.
- The central part of the West Valley west of Luke AFB is largely in open space and agricultural uses that are interspersed with large lot single family residences. This relatively undeveloped and unpopulated area is in Maricopa County but includes the Town of Buckeye and small sections of the City of Surprise.
- The southeastern part of the West Valley contains considerable developed areas, especially along the main traffic arteries, and agricultural lands that are rapidly being converted to residential use, especially in the City of Goodyear and the Town of Buckeye.
- The southwestern part of the West Valley contains significant open space and undeveloped agricultural lands that are gradually being annexed and are being considered for future residential and mixed uses.

2.4 GROWTH POTENTIAL AND PLANNED LAND USE (MUNICIPAL AND COUNTY)

The local political jurisdictions in the West Valley Study Area have prepared or are in the process of preparing general plans that address land use, housing, economic development, environmental, and related planning issues within or adjacent to their boundaries. These Plans are regulated by various State laws, including the Growing Smarter and Growing Smarter Plus legislation and by ARS §28-8481, among others. The major issues driving the general plans are future population growth and development and the various land uses and geographic areas that are required to enable that growth. The general plans have been reviewed and analyzed to determine the Conditions, Goals, Policies, Objectives and other planning recommendations that directly or indirectly impact the operations and the military mission of Luke AFB. The general plan review is provided in Appendix B.

The general plans provide for a build out population of 2.8 million people in the study area. The population forecast are shown in Table 2-2.

Table 2-2: Projected Build-Out Population

City ²	2000 Population ³	Projected Total Build-Out ⁴	% Increase 2000/Total Build-Out
Avondale	35,883	200,000	457.37
Buckeye	6,537	500,000	7,548.77
El Mirage	7,609	33,000 ⁵	333.70
Glendale	218,812	309,242 ⁶	41.33
Goodyear	18,911	688,777 ⁷	3,542.20
Litchfield Park	3,810	17,000	346.19
Peoria	108,364	486,700	349.13
Surprise	30,848	670,000 ⁸	2,071.94
Youngtown	3,010	NA	NA
Total	433,784	2,904,719	569.62

2.5 AIRSPACE

2.5.1 The National Airspace System

Today's airspace is a complex interconnected system in which resources need to be managed from a regional, national, and even global perspective. Because of changes in technology, operations, and user patterns, local airspace changes now have more far-reaching impacts than ever.

The National Airspace System (NAS) is in charge of all aircraft that are in motion at any given moment within U.S. airspace. The NAS oversees both U.S. civilian and commercial aviation and provides traffic control for military craft flying over domestic airspace. The NAS includes more than 18,300 airports, 21 air route traffic control centers (ARTCC), 197 terminal radar approach control (TRACON) facilities, over 460 airport traffic control towers (ATCT) and approximately 4,500 air navigation facilities.

When an aircraft is at an airport, it is managed by an airport traffic control tower (ATCT). The ATCT is located at the airport and handles the departure and arrival of aircraft at that airport. Large airports may have more than one ATCT due to their size and amount of traffic.

When the plane has departed the airport, the ATCT hands it off to the local terminal radar approach control (TRACON) facilities. A TRACON is normally the "middleman," taking over

² No estimates are provided for unincorporated Maricopa County.

³ Source: US Bureau of the Census, 2000.

⁴ Estimates derived from each municipality's General Plan.

⁵ Estimate is for year 2015.

⁶ Only a mid-range estimate was provided in Glendale's General Plan.

⁷ High-range population growth estimate.

⁸ High-range population growth estimate.

the management of aircraft from the time they leave an airport until they reach a cruising altitude of 18,000 feet (5,486 m) or higher. At that point, the TRACON hands off the aircraft to the regional ARTCC. However, if the aircraft is small and stays below 18,000 feet throughout the flight, the TRACON handles the entire flight.

As of 2001, there were 22 ARTCCs – 20 in the continental United States, one in Anchorage, Alaska, and another in Guam. During the year 2000, the ARTCCs routed over 46-million flights. Each ARTCC is responsible for an area of airspace defined by the Federal Aviation Administration (FAA) that may encompass several hundred thousand square miles and extend over several states.

ARTCCs break down their assigned airspace into sectors, which are usually defined with horizontal and vertical boundaries. For example, one sector may cover a geographic area of 500 square miles and range from ground to 23,000 feet, while a second sector covers the same geographic area but ranges from 23,000 to 37,000 feet. Each sector has an air traffic controller assigned to monitor it. The controller coordinates the flight paths of any aircraft that enter his or her sector and inform other controllers of aircraft that are about to enter theirs.

Occasionally, an aircraft never leaves the airspace of a single ARTCC, as is often the case with commuter flights. But usually, the aircraft's destination is in the jurisdiction of another ARTCC. In this case, the first ARTCC hands off the aircraft to the next ARTCC as it leaves the first ARTCC's airspace. This handing-off continues until the aircraft is within the boundaries of the destination ARTCC.

As an aircraft approaches its destination, the departure hand-off sequence is simply reversed. The regional ARTCC of the destination airport hands off the aircraft to the local TRACON, which guides the aircraft into the airport. As the aircraft prepares for final approach, the TRACON hands off the aircraft to the airport's ATCT. The ATCT guides the aircraft in for landing and tells it when it can go to the appropriate gate so the passengers can disembark.

2.5.2 Phoenix Airspace

Airspace within the Phoenix area is managed by the Albuquerque ARTCC, which controls airspace within most of Arizona and New Mexico, as well as parts of Texas. Within the Phoenix airspace, the Phoenix TRACON is responsible for traffic arriving at and departing from civilian airports. The Luke AFB Radar Approach Control (RAPCON) is responsible for aircraft operations to and from the Base. Having control of airspace within a major metropolitan region divided between civilian and military facilities is not unique to the Phoenix area (a similar situation exists with respect to the Las Vegas TRACON and Nellis Air Force Base RAPCON), but it adds complexity and potential conflicts to aircraft operations, and requires an additional level of coordination. For example, until the implementation of the Northwest 2000 procedure modifications by Phoenix TRACON and the FAA, Luke AFB operations were impacted by the proximity of one of the holding patterns on a Sky Harbor approach path, as well as by conflicts between northbound departures from the Base crossing one of the Sky Harbor approaches.⁹

⁹ Refer to Appendix C for a brief discussion of Phoenix Area Airports.

2.6 LUKE AIR FORCE BASE OPERATIONS¹⁰

2.6.1 Mission and Aircraft

Luke AFB is the home of the 56th Fighter Wing (FW), an Air Education and Training Command unit, and is the world's largest fighter training facility. The Base is located on approximately 4,200 acres in western Maricopa County and employs more than 8,000 people. The Base's mission statement reads, "Train the world's finest F-16 pilots and crew chiefs while providing agile combat support for air and space expeditionary forces."

The 56th FW is the largest fighter wing in the world with eight fighter squadrons training all U.S. Air Force F-16 pilots. More than 1,000 pilots are trained yearly in a variety of syllabus courses for the F-16. Approximately 38,000 sorties and 50,000 hours are flown in the F-16 annually with 196 F-16 aircraft currently assigned to the 56th FW.

The 56th FW also provides academic, simulator, and flying training and advanced F-16 training for Singapore and Taiwan Air Forces. More than 800 mission ready crew chiefs are trained annually to launch and maintain F-16's at bases around the world.

Luke AFB is also home to the 944th Fighter Wing, whose mission is to train F-16 pilots. Since 2000, the 944th FW has been a Reserve associate unit to Luke's 56th FW. Reserve instructor pilots from the re-activated 301 Fighter Squadron fly the 56th FW F-16's to train active-duty student pilots for their multi-role mission. The Reserve instructor pilot associate program is a joint Air Force Reserve Command and AETC initiative, designed to help with the Air Force's current active-duty pilot retention problem. It gives the Air Force the option of retaining experienced fighter pilots who leave active duty but who still want to be a part of the Air Force Reserve.

Student pilots from Luke AFB need to access Auxiliary Field #1, located about fifteen miles northwest of the Base, for instrument approach / landing training and the oval calibration pattern (LANTIRN) located two miles south of Aux 1, which is used to test the sophisticated equipment that F-16s carry to deliver precision guided munitions to targets in hostile territory.

2.6.2 Flight Tracks and Range Access Routes

The majority of flights from Luke AFB depart to the south and the majority of incoming flights approach from the north (Figure 2-3 – Overflight Area). A number of training flights throughout the day engage in repeated touch and go maneuvers, departing to the south, circling to the west-northwest and returning in a northerly pattern to the Base. Many of these touch and go flight patterns are within or adjacent to the Vicinity Box, but a significant number of flight tracks extend outside the Vicinity Box. Annually about 40,000 flights operate from the Base. Approximately three percent to five percent of those flights carry live ordnance. About three fourths of the live ordnance flights from Luke AFB head south for the Barry M. Goldwater Range (BMGR), using Range Access Routes extending from APZ II to BMGR. These routes extend in a southerly direction from the end of APZ II and proceed over the City of Goodyear. The 56th FW also conducts about 45,000 operations, largely practice approaches and landings, at the Gila Bend Auxiliary Field. In addition, about 12,000 training flights per year use Auxiliary Field #1, located fifteen miles northwest of the Base, for instrument approach training bringing the aircraft to an elevation ranging from 175 feet to 300 feet above the ground. Pilots also use the LANTIRN

¹⁰ The information contained in this Section was provided to ADOC by Luke AFB.

area, located two miles directly south of Aux 1 for weapons calibration training. Neither of the training operations at Aux 1 nor at LANTIRN requires aircraft to land.

Residents, workers, and visitors to the West Valley area around the Base are subject to military aircraft overflights on a regular basis. Provision of any map that shows the “normal” flight tracks used by pilots from the Base can be misleading. Traffic patterns into and out of the Base vary regularly because of weather, air traffic, temperature, type of aircraft, time of day / night and other conditions.

It is critical to note that flight tracks are not highways in the sky that are followed with rigor. Pilots, particularly student pilots, are likely to fly at some distance from what could be interpreted as the mainline or centerline of a flight track. Those variances may range from one mile to more than two miles on either side of the flight track’s centerline. Consequently, such maps must be interpreted with a great deal of caution, as the data they portray are dynamic rather than static or fixed.

2.6.3 Luke Airspace

The 56th Fighter Wing has scheduling and operational control of Special Use Airspace for four Military Operating Areas (MOAs) including: Gladden / Baghdad MOAs located thirty-nine miles northwest of Luke AFB; Sells MOA located east of Tucson and contiguous to the Barry M. Goldwater Range (the Goldwater Range); and Sunny MOA located northeast of Flagstaff. Special Use Airspace scheduling and operation control also exists for eight low-level Military Training Routes, which start to the east, south, and north of Luke AFB, all terminating on the Goldwater Range. The base also uses the Outlaw / Jackal MOA / ATCAA, located approximately 30 miles east of Phoenix, for air-to-air and night training missions. This is used jointly by Luke AFB and the Arizona Air National Guard, and is scheduled by the ANG from Tucson International Airport.

2.6.4 Ranges

The Goldwater Range is located in southern Arizona, east-southeast of Yuma along the Mexico border. The Goldwater Range is divided into eight sub-ranges, four manned air-to-ground weapons delivery ranges, three tactical air-to-ground weapons delivery ranges, and one air-to-air training range. The U.S. Department of Defense has determined that the Goldwater Range is essential for the effective combat training of the United States military air forces, including the aircraft stationed at Luke AFB. Approximately 50,000 sorties are flown annually on the Goldwater Range by all military service branches. The 56th Fighter Wing flies approximately 50 percent of the missions scheduled on the Goldwater Range.

The 355th Fighter Wing at Davis-Monthan Air Force Base, 162nd Fighter Wing at Tucson International Airport, Air Force Air National Guard “Snowbird Operations” at Davis-Monthan Air Force Base, several squadrons based at the Yuma Marine Corps Air Station, Naval units operating from California and from carriers, and the Western Army Aviation Training Site at Pinal Airport are also designated “Regular Users” of the Goldwater Range.

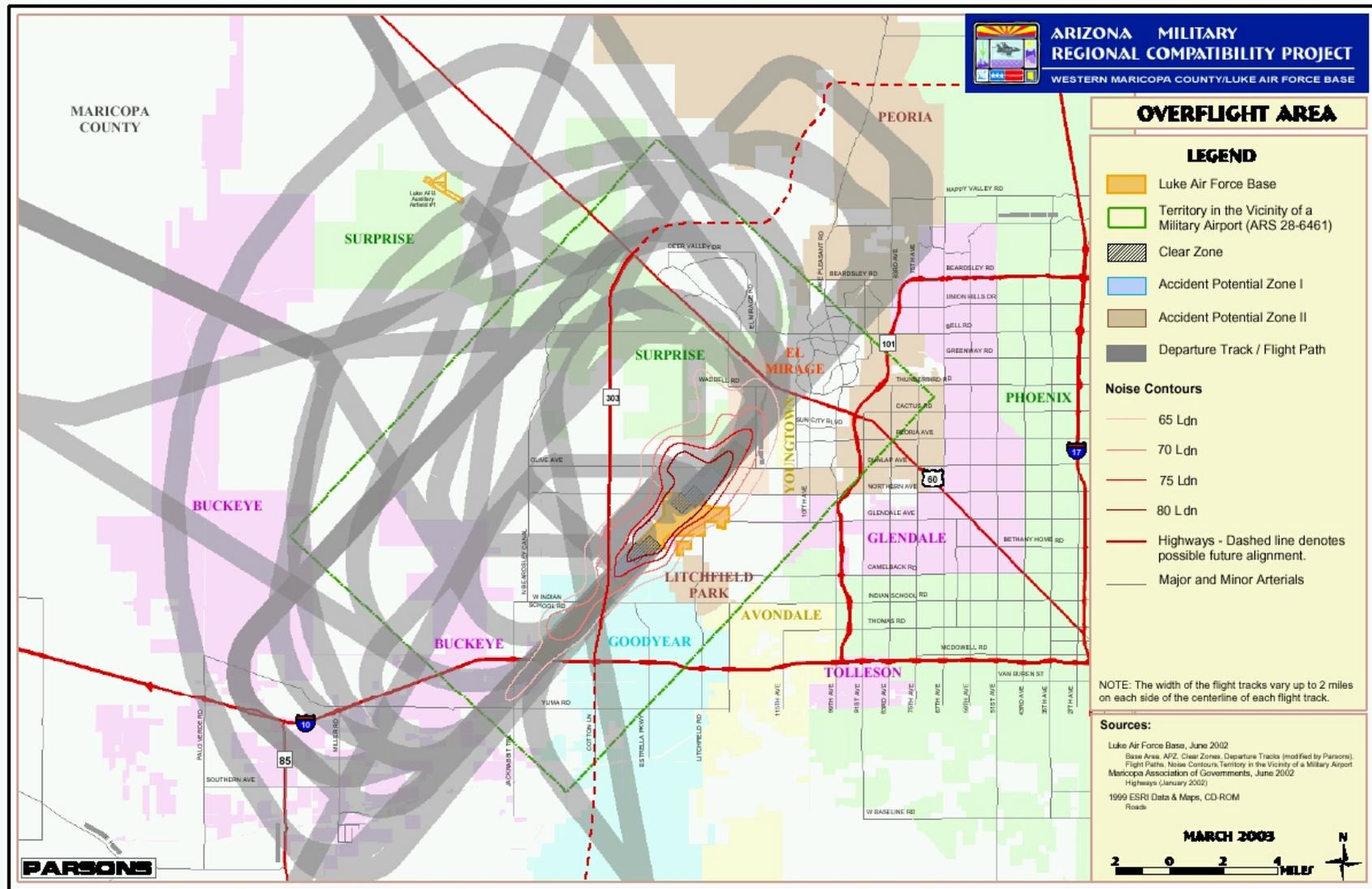


Figure 2-3: Overflight Area

2.7 LAND OWNERSHIP

Land ownership in the West Valley can be divided into four principal classifications: federal, state, county / municipal, and private. The ownership patterns across the West Valley that are briefly described below are shown on the accompanying Figure 2-4 – Land Ownership.

2.7.1 Federal Lands

Several large parcels of Bureau of Land Management (BLM) property are in the West Valley. In large part, they are located north, west and south of Luke AFB. The largest BLM parcel is adjacent to and south of the White Tank Mountain Regional Park. Several other large parcels are adjacent to and somewhat farther west of the Park. Additional BLM properties are scattered throughout the Valley: a number of these parcels are to the north and east of the future route of Loop 303 north of its intersection with Grand Avenue (U.S. 60), and a number of other BLM parcels are located south of Interstate 10, between Estrella Mountain Regional Park and State Route 85.

Luke AFB constitutes the second largest concentration of federally owned property in the West Valley. The Base is located about five miles north of Interstate 10, five miles west of Route 101, and two miles east of Loop 303. The Department of Defense also owns and operates Auxiliary Field #1, which lies north of the White Tank Mountain Regional Park.

2.7.2 State Trust Land

There are numerous parcels of State Trust Lands in the West Valley. White Tank Mountain Regional Park is substantially encircled by State Trust Lands. Two major concentrations of Trust Lands are directly north of the Park and north of Bell Road. A concentration of discontinuous tracts of land are along Interstate 10, both to the north and south of the Interstate. The tract of Trust Lands located at the intersection of Cotton Lane and Interstate 10 is presently occupied by a State Prison. Within the Luke noise contours and APZ II are 1,381 acres of State Trust Lands.

2.7.3 County / Municipal Lands

Maricopa County operates two large regional parks in the West Valley: White Tank Mountain and Estrella Mountain. White Tank Mountain Regional Park, with 29,217 acres, is the largest park in the County system, and is directly west of Luke AFB. Estrella Mountain Regional Park, which has approximately 20,000 acres, is directly south of Interstate 10 and the Base. The City of Glendale operates Thunderbird Park, located north of State Highway 101 near 67th Avenue. A number of other smaller municipal properties, including parks and public building sites are also located throughout the West Valley.

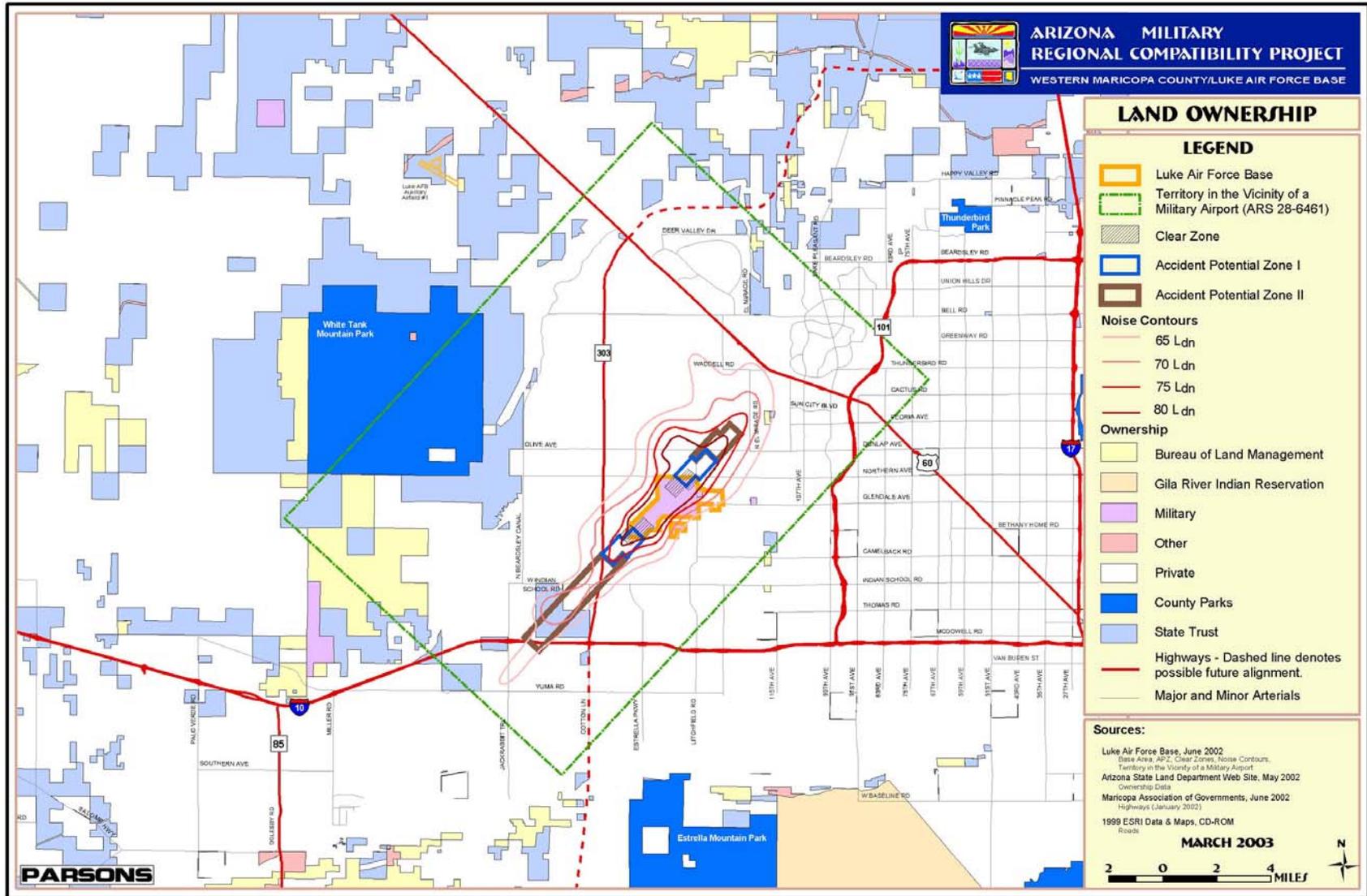


Figure 2-4: Land Ownership

2.7.4 Private Lands

The majority of property ownership in the Western Maricopa County / Luke AFB Study Area is private. Most of the area extending from Interstate 17 west to the State Trust land abutting White Tank Mountain Regional Park, and from Estrella Mountain Regional Park and the Gila River Indian Reservation north to Bell Road is in private ownership. That concentration of private property is interspersed with relatively few parcels in other ownership, with the exception of Luke AFB and the State Trust Lands.

2.7.5 Other Lands

The 372,000-acre Gila River Indian Reservation is south of Interstate 10, contiguous to, east and south of Estrella Mountain Regional Park.



3 LAND USE COMPATIBILITY LAWS

The land uses within the vicinity of Luke AFB are regulated by federal, state and local laws; regulations; and programs. The nature and status of existing land use compatibility laws are discussed in this chapter. Section 3.4, Compliance with Existing Laws, identifies land areas that may not be in compliance with existing law. Chapter 5 recommends compatible land uses within the noise contours, Clear Zones and APZs.

3.1 FEDERAL

The Air Installation Compatible Use Zone (AICUZ) program has been developed by the U.S. Department of Defense (DoD) to promote compatible land-use development around military airfields. The AICUZ Program creates standard land use guidelines in terms of allowed uses for areas affected by noise exposure and accident potential and provides local government jurisdictions with information that can be used to regulate land uses and development patterns (Appendix D).

Three basic types of constraints that affect, or result from, flight operations are described in the AICUZ studies. The first constraint involves areas that the FAA and the DoD have identified for height limitations. The second constraint involves noise zones based on the day-night noise level (dnl), which are plotted in 5 decibel (dB) increments, ranging in decibels from 65 dnl to 80+dnl. The third constraint involves Clear Zones and Accident Potential Zones based on statistical analysis of past DoD aircraft accidents, which determined that areas immediately beyond the ends of runways and along the approach and departure flight paths have significant potential for aircraft accidents. The last two constraints are used in combination to generate the table of compatible uses in the AICUZ Program.

3.2 STATE¹¹

The rapid population growth and urban development in areas around the military bases in Arizona have resulted in encroachment that is negatively impacting the present operation and future missions of Arizona's military bases, especially airports. As a result, over the past several years the State of Arizona has adopted legislation that affects land use planning, land development and zoning regulation for political jurisdictions with territory in the vicinity of military airports. The relevant Titles and statutes of the Arizona Revised Statutes (ARS) containing legislation that address a variety of land use and other factors associated with the operation of military airports are briefly summarized below and are cited in Appendix E.

ARS Title 9 contains legislation governing cities and towns; the cited sections are especially concerned with municipal planning issues. ARS Title 11 contains legislation governing counties; the cited sections are especially concerned with county planning and zoning. ARS Title 15 contains legislation governing education; the cited sections are especially concerned with financing school development. ARS Title 28 contains legislation governing transportation; the cited sections are especially concerned with airport zoning and regulation and joint powers airport authorities. ARS Title 32 contains legislation governing professions and occupations; the cited

¹¹ Source: City of Glendale, Department of Intergovernmental Relations, Arizona Revised Statutes Relating to Military Airports, 2002. This reference contains the full text of the statutes.

sections are especially concerned with real estate transactions and land development. ARS Title 41 contains legislation regulating state government; the cited sections are especially concerned with the duties of the State Department of Commerce with respect to military facilities. ARS Title 48 contains legislation regulating special taxing districts; the cited sections are especially concerned with agriculture preservation districts and military airports.

3.3 LOCAL

Maricopa County and nine local political jurisdictions in the West Valley have regulations and ordinances that specifically address land use and zoning issues in the territory in the vicinity of Luke AFB. The relevant ordinances are reviewed and briefly summarized in Appendix E with respect to their specific contributions to regulating land use in territory around Luke AFB.

Regulations and ordinances implemented in the West Valley area by local political jurisdictions include, zoning, military airport zoning, airport impact and noise overlay districts, notification areas, building code insulation (noise attenuation), and avigational easements.

3.4 COMPLIANCE WITH LAND USE COMPATIBILITY LAWS

Compliance of land uses with existing compatibility laws and regulations is a direct function of whether the uses comply with Arizona statutes and the U.S. Department of Defense AICUZ guidelines. In order to determine compliance, in June 2002 existing land uses in the Study Area were collected in electronic files created by the Maricopa Association of Governments and were mapped in GIS format. Those land uses were then overlain with electronic data obtained from Luke AFB: Clear Zones, APZ I, APZ II, the official noise contours (Figure 3-1: Inconsistent Land Use).

The land uses and the hazard zone overlay were then checked against the compatibility criteria established by State law. Those uses that were inconsistent with the legislation are shown by a diamond hatched pattern on Figure 3-1. The majority of the inconsistent uses are a variety of residential use categories, totaling approximately 182 acres. The second largest category, totaling approximately 44 acres, is a retail operation selling farm produce within APZ II. (As of February 2003, this use is being relocated outside of APZ II). The third largest category is a portion of a golf course (36 acres) that is within the 80 dnl noise contour and institutional use (36 acres) within the 75 dnl contour.

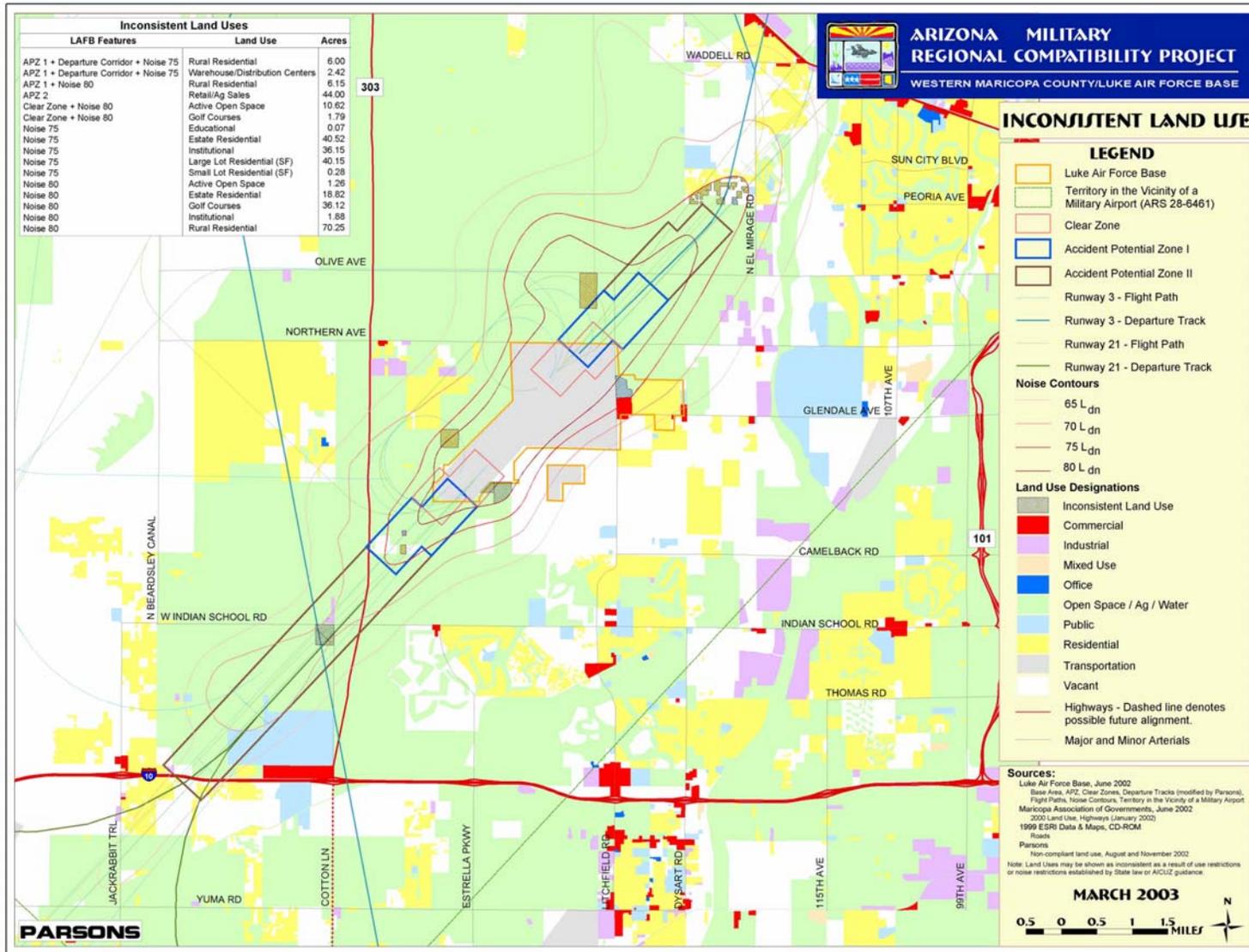


Figure 3-1: Inconsistent Land Use

3.5 DIFFERENCES BETWEEN LAND USE COMPATIBILITY LAWS / PROGRAMS

In 1995, the State of Arizona passed legislation to address the issue of residential and other compatibility issues around Arizona's military airports. The statute, ARS §28-8481, requires all political subdivisions in the vicinity of a military airport to adopt land use plans and enforce zoning regulations that assure development compatible with the high noise and accident potential generated by military airport operations. That legislation created a table of compatibility with reference to hazard zones and high noise areas.

The two sets of tables regulating land use (in AICUZ and ARS §28-8481) contain inconsistencies. They do not address the same hazard zones and they organize the noise zones differently. For example, ARS §28-8481 does not recognize or identify a Clear Zone nor does it regulate uses in that high hazard zone. ARS §28-8481 defines a larger area, formerly known as the Southern Departure Corridor, as constituting APZ II. And an additional noise zone, 85+ decibels, is included in ARS §28-8481 that is not identified in the AICUZ Program.

Certain uses allowed in the AICUZ Guidance are not permitted under Arizona law and uses not allowed in the AICUZ Program are allowed under Arizona law. Specific land use categories addressed in the AICUZ Program are not addressed in ARS §28-8481. Examples of this inconsistency include schools and public assembly uses, which are not listed as separate land uses in the State legislation but are contained in the AICUZ Program. This situation may result in confusion and uncertainty as to which land uses are compatible with the operation of military air bases.

The land use compatibility tables in the AICUZ Program and ARS §28-8481 regulate and identify compatible land uses in areas around military airports. However, both regulatory programs allow uses that concentrate and congregate population in the high noise and accident potential zones.

The AICUZ Program allows wholesale trade, retail sale of building materials and automobiles, business services, repair services in APZ I and APZ II, and permits a variety of service uses, amusements, recreation, and single-family residential in APZ II, uses that are incompatible with military aircraft carrying live ordinance. The AICUZ Program (Table 3-1) also allows most types of retail trade and services within noise zones 65 dnl through 79 dnl. Single-family residential, schools, churches, hospitals, and retail-food uses are permitted in noise categories 65 to 74 decibels. Public assembly uses are allowed in the 65-69 category.

Table 3-1: Compatibility of Uses – AICUZ Program

Selected Land Uses	Clear Zone	APZ I	APZ II	65-69	70-74	75-80	80+
S-F Residential	N	N	Y	Y	Y	N	N
Schools	N	N	N	Y	Y	N	N
Churches	N	N	N	Y	Y	N	N
Hospitals	N	N	N	Y	Y	N	N
Public Assembly	N	N	N	Y	N	N	N
Outdoor Amphitheaters	N	N	N	N	N	N	N
Retail-Food	N	N	Y	Y	Y	Y	N

Source: Prepared by Parsons from USAF data.

Although ARS §28-8481 does not permit single-family residential uses in any of the hazard or noise zones (Table 3-2), it is silent about uses in the Clear Zone, since the law does not define such a zone.

Table 3-2: Compatibility of Uses – ARS §28-8481

Selected Land Uses	APZ I	APZ II	65-69	70-74	75-79	80-84	85+
S-F Residential	N	N ¹²	N ¹²	N ¹²	N	N	N
Schools ¹³	N	N	N	N	N	N	N
Churches	N	N	Y	Y	N	N	N
Hospitals	N	N	Y	Y	N	N	N
Public Assembly ¹⁴	N	N	N	N	N	N	N
Outdoor Amphitheaters	N	N	Y ¹⁵	Y ¹⁵	Y ¹⁵	N	
Retail-Food	N	N ¹²	Y	Y	Y	N	

Source: Prepared by Parsons from ARS §28-8481 data.

Various uses that concentrate and congregate population are permitted by ARS §28-8481 in the accident potential and high noise zones. All categories of personal and business services that are listed in the statute, including indoor recreation, and several types of commercial-retail trade, wholesale trade, retail sale of building materials and government services are permitted within APZ II and noise zones 65 dnl through 79 dnl. The above-mentioned uses are incompatible with military aircraft carrying live ordinance and high noise zones. Outdoor amphitheaters and music shells, retail sale of general merchandise, retail apparel, water-based recreation, eating and drinking, and retail-food uses are permitted within noise zones 65 dnl through 79 dnl. Churches, medical and health services, auditoriums and concert halls, and other public and quasi-public services are permitted within noise zones 65 dnl through 74dnl.

¹² The use is allowed in the AICUZ Guidance but is not permitted under Arizona law.

¹³ Schools as a specific land use category are not addressed in ARS §28-8481; the data provided above are for the category: Other Public and Quasi-Public Services.

¹⁴ Public Assembly as a specific land use category is not addressed and it is not defined in ARS §28-8481; the data provided above are for the category: Other Public and Quasi-Public Services.

¹⁵ The use is allowed under Arizona law, but not under the AICUZ Program.

This section focuses on existing law. The U.S. Department of Defense may in the near future modify the AICUZ Program, especially in terms of defining compatible land uses within the 55 to 65 dnl contours. Changes to the AICUZ Program may require modification of this Land Use Compatibility Plan and the General and Comprehensive Plans of the local jurisdictions.



4 TRENDS AND ISSUES

A number of trends in western Maricopa County are directly and indirectly affecting Luke AFB's present and future ability to carry out its mission. Among these trends, which are briefly reviewed and evaluated in the first part of this chapter, are rapid population growth, development of low density residential housing, and encroachment of urban and suburban uses on the Base. The second part of the chapter identifies compatibility issues that are the result of urban encroachment and affect the operation and mission of Luke AFB, particularly issues related to economic impacts, safety, and noise.

4.1 TRENDS

4.1.1 General Trends

Today, the West Valley is one of the fastest growing regions in Arizona and in the country. Among the many reasons for this growth are the close proximity of the West Valley to Phoenix, available water, flat land that is easy to develop, and access to the region's highway network. The benefits of this development include additional choices for residential location, a mix of housing types that range from moderate to upper end, and increased employment opportunities that are relatively close to home. However, this growth and development in the West Valley which has resulted in the rapid urbanization of previously rural, agricultural, and natural areas in the Sonoran Desert is also related to other trends:

- Replacement of large-scale agricultural operations in the West Valley with uses of higher density and intensity, for example, single-family residences, schools, churches, and commercial centers. However, relatively little industrial development has occurred in the area as a result of a number of factors, including competition with long-established and more centralized industrial areas well served by the regional transportation network.
- Residential development in the West Valley has surged ahead of the employment base. Today, many of the municipalities are in effect bedroom communities with a growing but modest employment component.
- The West Valley is home to a number of political jurisdictions that are competing for growth and development by actively extending their geographic bases through annexation. These annexations of what is typically agricultural land are frequently followed by the planning and permitting of those areas for large-scale residential and residential-related development.
- The Arizona legislature has passed several laws that affect the future growth and development of the West Valley: ARS §28-8481 that defines planning, zoning and compatible uses around military airports, the Growing Smarter Act, enacted in 1998, and Growing Smarter Plus, enacted in 2000. The Growing Smarter legislation includes the following objectives:
 - Reform the community planning process by adding a growth-related component to the General Plans and Comprehensive Plans require zoning procedures to conform to the new Plans

- Increase public participation in the planning process and require a two-thirds vote by the municipal governing bodies when adopting or amending the General Plan or Comprehensive Plan
- Ensure that the plans prepared for State Trust lands are coordinated with the General Plans for the community(s) in which the Trust lands are located
- Require counties to prepare and adopt Comprehensive Plans
- Require General Plans and Comprehensive Plans to consider the following elements: open space, land use, circulation, growth areas, environmental planning, and water resources
- The Growing Smarter legislation requires larger cities and counties to include the following elements in their Plans: Public Service and Facilities; Housing; and Conservation, Rehabilitation and Redevelopment. In addition, the legislation addresses the issues of preserving open space, managing growth and lot splits, enhancing citizen participation in the planning process, and authorizing development fees.

A number of significant trends concerning Luke AFB and its mission also affect the West Valley. In the past several decades, military aircraft characteristics have changed considerably. It is likely that the short- and mid-term future will bring additional changes in these aircraft characteristics, including the types of aircraft stationed at the Base, engine number and configuration, aircraft size, and noise levels. The Base's flight operations have also been modified in the recent past in response to pressure from surrounding communities and the Base's internal determination of heightened health and safety risks to people living and working in the Northern Departure Corridor. As a result, Luke AFB has shifted flight operations so that a majority of flights now departs to the south and land from the north. As part of that operational change, all live ordnance departures are now to the south. Nighttime operations will likely increase in the future as the Base prepares pilots and crews to respond to 24-hour threats to our national security, and would also increase under wartime conditions. According to officials of the 56th Fighter Wing Command at the Base, the magnitude, extent, and duration of those operations are unable to be determined at this time. Finally, the Base's military mission may evolve in terms of the types of combat support it currently provides for expeditionary forces.

4.1.2 Population Trends

The Phoenix Metropolitan area has been one of the fastest growing metropolitan areas in the nation. Over the last forty years (1960-2000), the City of Phoenix's population tripled from 439,000 to 1,321,000. During that same period, the metropolitan area population, as measured by all of Maricopa County, more than quadrupled from 664,000 to more than three million. Throughout that forty-year period, growth has continually spread outward from the center of Phoenix to the suburbs.

Through the periods of the 1970s, 1980s, and 1990s much of the growth was concentrated in the eastern portion of Maricopa County. That concentration of growth followed the substantial expansion and improvement of U.S. Route 60 "Superstition Freeway" which, in conjunction with Interstate 10, connects the East Valley to the Phoenix Central Business District. The extent of development in the East Valley is best illustrated through simple analysis of the population growth in the East Valley over time. Table 4-1 illustrates the growth of several key cities in the East Valley. Substantial growth occurred in each of the listed East Valley municipalities over an extended period of time. The leading edge of that growth moved further east (away from central

Phoenix) as time continued, with the most recent growth occurring in the furthest eastern jurisdictions.

Table 4-1: Growth of Sample East Valley Cities

City	1960	1970	1980	1990	2000
Tempe	25,000	64,000	107,000	142,000	159,000
% Change		155	68	33	12
Mesa	34,000	63,000	152,000	288,000	396,000
% Change		87	142	89	38
Chandler	9,000	14,000	30,000	90,000	177,000
% Change		44	116	203	97
Gilbert	2,000	2,000	6,000	29,000	110,000
% Change		8	190	409	277

Source: U.S. Bureau of the Census

It is very likely that a similar pattern is currently occurring and will continue in western Maricopa County. In the late 1980s, the last portion of Interstate 10 was completed, linking the West Valley to the Phoenix Central Business District. Similarly, this connection has served as a similar catalyst for development in the West Valley as the substantial expansion and improvement of U.S. 60 was for the East Valley. In fact, the intervening years have seen dramatic growth in all of the West Valley including the areas adjacent to Luke AFB.

Population projections assembled from the General Plans of nine West Valley communities and from recent MAG estimates indicate a projected total build-out population of almost 2.8 million. The population of these same communities according to the 1990 census was roughly 243,000 and in 2000 it was approximately 434,000. By 2002, that population had grown to almost 500,000.

Table 4-2 illustrates the percentage change in several West Valley cities over the last five decennial censuses. The pattern of population growth in these West Valley cities seems to clearly reflect the early pattern of development and population growth in the East Valley. Even if the population estimates prepared in the General Plans and by MAG are optimistic, the historical evidence clearly supports recognizing that substantial new population will locate in the areas adjacent to and surrounding Luke AFB.

Table 4-2: Growth of Sample West Valley Cities

City	1960	1970	1980	1990	2000	Build-Out ¹⁶
Glendale	16,000	36,000	97,000	148,000	219,000	315,000
% Change		128	168	52	48	44
Avondale	6,000	7,000	8,000	16,000	36,000	115,000
% Change		8	23	98	122	219
Surprise		2,000	4,000	7,000	31,000	678,000
% Change			53	91	333	2,087
Goodyear	2,000	2,000	3,000	6,000	19,000	374,000
% Change		29	28	128	202	1,868

Source: U.S. Bureau of the Census

Throughout its history, Luke AFB has carried out its mission in the skies over largely unpopulated areas. In recent years, that pattern has begun to change as development occurs in areas adjacent to and surrounding the Base.

As discussed, the Base modified some of its take-off and departure practices in recognition of increasing population north of the Base under the Northern Departure Corridor. It is important to note that either all or the substantial majority of the land uses and development in that Corridor met both Department of Defense AICUZ guidance and applicable State and local laws and regulations. In other words, following the letter of the law failed to protect the Northern Departure Corridor from encroachment that jeopardized the Base's military training operations. It is possible that future development south of the Base will necessitate similar modifications to the now reduced number of take-off and departure options available to the flight training operations. In order to protect Luke's mission it is necessary to ensure that the Southern Departure Corridor and the Range Access Routes to the Goldwater Range are not subjected to future encroachment that may eventually compromise the Base's mission.

The substantial increase in population in the areas adjacent to and surrounding the Base must inevitably lead to greater concerns with over-flights and noise. Even if the inherent safety or noise levels associated with Base operations do not increase, the number of negative interactions with individuals on the ground must increase simply as a result of the tremendous expansion in the population and therefore an increased number of contacts.

It is, for example, almost inevitable that noise complaints due to over-flights and operations will increase in number as the population increases. Many of the activities of the Base now occur over largely unpopulated or sparsely populated areas. As populations increase dramatically in those areas,¹⁷ the number of people exposed to noise will increase exponentially. The extent to which greater numbers of noise complaints will adversely influence the operations of the Base remains to be seen.

Understanding the risks associated with a dramatic increase in population adjacent to and surrounding the Base is essential to the development of land use plans that will facilitate the long-term continued operation of Luke Air Force Base.

¹⁶ Source: MAG Population Estimate, October 2002.

¹⁷ Refer to the build-out populations of the cities of Surprise and Goodyear in Table 4-2.

4.1.3 West Valley Real Estate Trends

It was not very many years ago when Luke AFB was surrounded by land uses that were largely agricultural in nature. However, during the past two decades, the population of the Phoenix Metropolitan Area has doubled from 1.6 to over 3.0 million. Eastward expansion of the metropolitan area now faces some constraints and the pressure for westward expansion is intensifying. This rapid growth of the Phoenix Metropolitan Area, combined with increased training activity at Luke, has altered the expectations of landowners around the Base concerning the use and value of their properties.

Landowners in the West Valley are beginning to experience dramatic value appreciation as their land transitions from rural agricultural to suburban residential use. Agricultural lands that sold for \$2,000 to \$4,000 per acre a few years ago are bringing prices in the \$7,000 to \$25,000 per acre range from developers. Well-located parcels with utilities have brought even higher prices. The appreciation is in the three- to four-fold order of magnitude.

Luke AFB, with its live ordnance F-16 takeoffs headed for the Barry M. Goldwater Range, impact the ability of a few landowners in the West Valley to fully benefit from the value increase resulting from metropolitan area expansion. Some changes as to how the noise contours have been defined and the recent State law extending APZ II from 15,000 to 30,000 feet have exacerbated the concerns of landowners and others.

The near-term market demand for real estate around Luke AFB is for suburban-style residential development. The entitlement for this type of land use brings the highest price and most immediate sales potential. However, our legal system does not guarantee that each and every landowner is able to achieve the "highest and best" economic use of his or her property. It simply ensures that the landowner is able to put his or her property to some economic use. Agricultural use or warehouse / distribution use, which are both reasonably compatible with the presence of Luke AFB, constitute economic use of the property.

4.2 ISSUES

A number of compatibility issues arising from urban encroachment directly and indirectly affect the operation and mission of Luke AFB, particularly issues related to economic impacts, safety, and noise. This section briefly discusses the major components of each issue, identifies the critical elements, and identifies potential means to resolve the issue.

4.2.1 Land Acquisition

The implementation of policies to ensure compatible land uses around Luke AFB can be reduced to three fundamental concepts, even though there are innumerable variations to each.

1. Zoning and other forms of regulatory control at the State, County and local government levels to prevent the encroachment of incompatible lands uses
2. The acquisition of the property most critically needed for preserving the mission of Luke AFB
3. Purchase of development rights for properties in the high hazard and high noise zones

Once specific properties have been identified for acquisition, the owners of these properties should be entitled to fair compensation for their land. Many factors enter into the determination of land value and include:

- The location of the property relative to future growth
- Availability of or proximity to infrastructure necessary for urban development – roads, sewer lines, and water systems
- The natural characteristics of the property – size, shape, configuration, elevation, slope, views, flooding, grading needed for future development, etc.
- Influence of surrounding uses – golf course, park, open space, land fill, airport, Air Force Base or suburban development
- The permitted uses – zoning, general plan designation, environmental clearances, etc.
- Strength of the market – timing relative to economic, business and real estate market cycles

Traditionally, the three approaches to estimating land value include:

- Comparable sales – value as determined by actual recent sales of comparable property in similar locations
- Income approach – present value of the future income stream generated by the use of the property net of the cost necessary to produce that income
- Replacement cost approach – the cost one has to incur to replace the function that was being performed on the property

If a public entity is interested in acquiring property, it will typically conduct an appraisal to help establish the offering price. An appraisal is a formal valuation performed by certified appraisers in accordance to the Uniform Standards of Professional Appraisal Practices promulgated by the Appraisal Institute. The typical appraisal will use all three land valuation approaches cited above to arrive at a “fair market value.” Very likely, the property owner will retain his / her own appraiser to conduct an appraisal based upon his instructions. The two appraisals will provide the basis for negotiation to determine a transaction price. If the two parties are unable to arrive at a negotiated price, they would have three options:

- Agree to third party arbitration
- Decide to litigate
- Abandon the transaction

The United States Senate recently approved a military construction appropriations bill that included \$13 million for the acquisition of property around Luke AFB. The State of Arizona, in conjunction with local jurisdictions, should determine if this amount, used in combination with land use regulations, will be sufficient to protect the future mission of Luke AFB. If not, the State may wish to provide supplemental funding; but that decision is one to be made by the legislative and executive branches of State government.

4.2.2 Economic Issues

4.2.2.1 Proportionality of Benefits and Burdens

Military installations, such as Luke Air Force Base, produce a variety of benefits that must be recognized and appreciated. At the same time, these facilities (and their preservation) impose

burdens. It is important to place in an appropriate manner the burdens of such facilities on those that benefit from their existence.

Among the most obvious positive impacts an established military installation are the economic benefits bestowed on the surrounding community in the form of secondary employment and economic activities. Typically, those economic benefits overflow to the entire regional and statewide economy where the military installations are located.

However, possibly the greatest impact of these installations is their contribution to national defense. Because this benefit is broadly dispersed, across all Americans and even our international allies, it is often only discussed in a very general way and examined on a qualitative basis. Full recognition of the contribution each such facility makes to national defense, especially those installations with unique (sometimes irreplaceable) geographic circumstances, is essential to a fair and valid evaluation and allocation of the burdens imposed by such facilities.

Even though precise measurement of all of the benefits produced is very difficult, if not impossible, it is critically important to identify, allocate and estimate these benefits to the greatest extent possible. The resulting allocation of benefits must then guide the allocation of burden.

Fair and just treatment of all concerned demands an appropriate allocation of the burdens imposed by military facilities commensurate, or are proportional, with the benefits received. Simply stated, those that receive the greatest benefit should bear the greatest burden.

By way of illustration, nearby landowners receive benefits from the existence of military installations as the resulting local economic activity raises demand for nearby business locations and consequently raises the overall demand for land in the area. Similarly, local, regional, and state governments benefit from higher tax revenues resulting from the economic activity, direct, indirect and induced, as a result of the military installation. Finally, all Americans benefit from the unfettered execution of the facilities' military missions.

The challenge is in properly allocating the proportionate benefit received by these (and other) groups and individuals. Notwithstanding the difficulty, a genuine effort to do so is essential and must precede a fair discussion of the allocation of burden. Clearly, it would seem that the greatest benefit flows to the nation as a whole due to the basic purpose and mission of any such facility. This evaluation is supported by the recognition that even though the "benefit" received by each citizen may be indirect -- a component of overall national security -- there are hundreds of millions of people benefiting. This value is greatly enhanced if the location of the facility has unique geographic advantages that cannot be easily replicated (if at all). On the other extreme, landowners in the vicinity of a military installation would seem to receive the least benefit -- that derived from a marginal increase in the demand for their property due to increased local economic activity. State, regional, and local governments would seem to fall somewhere in between.

In light of such an allocation of benefits, it would be both fair and appropriate for the burdens of military installations to be similarly distributed. Thus, the greatest burden, or obligation for mitigating any burden, should proportionately fall to the federal government as the representative / agent for the American people (and their allies). Conversely, the least burden, or obligation for mitigating any burden, should fall proportionately on the neighboring landowners. Again with state, regional, and local governments falling somewhere in between.

Using such a proportionality standard, restrictions on land uses in the vicinity of military installations should be borne not solely by landowners, but proportionately by the beneficiaries of the installations operations. Thus, to the extent that landowners are unreasonably restricted (or deprived) in the use of their land, compensation should be paid, or any loss otherwise

substantially mitigated by other beneficiaries. Recognizing there are some economic benefits that accrue to landowners as a result of the economic activity associated with such facilities would justify landowners bearing a proportionate portion of the burden. But this proportionate share would seem relatively small.

Finally, it would seem that some credit must accrue to the federal government for the spending at such military installations and the consequent local, regional, and statewide economic activity. But, the preponderance of the burden, even after recognizing such contribution, would seem to fall proportionately on the federal government.

4.2.2.2 Economic Impact of Luke Air Force Base

Recent economic impact studies have shown that military facilities and operations in Arizona contribute substantially to the State's economy and consequently to the fiscal health of State and local governments. Similarly, Luke AFB has been estimated to generate almost \$1.4 billion in direct, indirect, and induced economic activity within Maricopa County.

To fully evaluate the economic importance of any military installation (or any economic driver), it would be necessary to fairly evaluate and estimate the economic impact of reasonable alternative uses of the land (and possibly facilities) involved. Such an evaluation would necessarily be somewhat speculative, as it would entail assumptions regarding the potential alternative uses. Ideally, several alternative scenarios would be evaluated. It would be critically important to utilize comparable methodologies, techniques, and factors to estimate the economic impact of each scenario, including the current military use.

Comparing the economic impact of the existing military installation to the likely alternative uses for the same land (and possibly facilities) would provide a more meaningful understanding of the marginal economic benefit of facility. The marginal economic benefit of the existing military installation is determined by comparing the total economic impact of the current operation to the total economic impact of one or more alternative use(s) of the same land. The difference between the total economic impact of current use and the total economic impact of the alternative is the marginal economic benefit. If the total economic impact of the current use is *greater* than the total economic impact of an alternative use, the current use has a *positive* marginal economic benefit. If the total economic impact of the current use is *less* than the total economic impact of an alternative use, the current use has a *negative* marginal economic benefit. Assuming that at least some alternative use with some economic value was possible, the *marginal* economic benefit of the military installation would be *less* than its total economic impact. Understanding the marginal economic benefit, positive or negative, would provide important information for decision makers, especially public policy decision makers.

Finally, it is inherent in the fundamental purpose and mission of military installations that their primary value lies in providing national defense rather than economic stimulus. Unlike virtually any other enterprise, the full value of military operations must recognize and reflect this value as well. Economic analysis provides important and useful information, but can reveal only one aspect of the overall value of such activities.

4.2.2.3 Noise Levels and Contours Associated with Future Aircraft

Setting aside essential safety issues such as live ordnance and aircraft crashes, noise is the largest burden placed on surrounding areas by the military operations at Luke Air Force Base. Current compromise has led to the establishment of restrictions in some areas and notification in other areas based on established noise levels and patterns. However, even with current restrictions and

notification, single-event noise and changing flight operations have led to some noise issues surrounding the Base.

The current compromise patterns are not based on actual, current aircraft noise of actual, current flight operations. Furthermore, the patterns do not anticipate likely future changes in aircraft or flight operations.

As substantial numbers of new residents migrate to the developing residential communities in the vicinity of the Base, the absolute number of people affected by aircraft noise will continue to increase. If future changes in aircraft or flight operations increase noise levels substantially above current levels, even if the new levels are technically within the established limits, it is probable that noise complaints will rise dramatically. Stated another way, the prevailing standard will not be the “published” noise levels, but rather residents expectations, which will be formed by actual experience, not by hypothetical standards.

Given the likely number of future residents in the vicinity of the Base, even low levels of discontent with noise, voiced by hundreds of thousands (or even millions) of residents may constitute substantial political pressure to alter, curtail or eliminate the Base’s operations. Arguments of “prior notice” and “the Base was here first” may well be swamped by the sheer number of dissatisfied voters.

4.2.2.4 Imposition of Restrictions Only Upon Identification of Compensation

Recognizing the inherent conflict between unfettered development within the vicinity of Luke AFB and the continued pursuit of maximum mission flexibility by the Air Force, some reasonable plan for compatible development must be identified and implemented. Undoubtedly, some potential land uses will be determined to be incompatible and will need to be appropriately restricted.

Any such restrictions will inevitably lead to questions regarding “fair compensation” for landowners for their loss of development opportunities, in whole or in part. Generally, the imposition of land use restrictions has been by government fiat, rather than free market purchase. This historical pattern has led to substantial mistrust by landowners and developers of the future intentions of government officials and agencies.

All parties have generally accepted the legitimacy of appropriate compensation where a property “taking” has occurred. However, some disagreement has surrounded the threshold level at which a land use restriction crosses over from being a legitimate public planning tool to becoming an excessive restriction on the use of the land, which thereby constitutes a “taking” that must be compensated.

Furthermore, the historical pattern has been to initially focus most of the energy and effort on determining what government-imposed restrictions are appropriate and on how to best enforce the identified restrictions. Then, only after the restrictions have been imposed, has attention been turned, if at all, to the possible need for compensation of any injured parties, such as landowners or developers.

A more effective approach might be to condition the implementation of any land use restrictions on the prior identification and securing of adequate compensation measures for any economic losses resulting from the restrictions. By requiring that compensation measures precede the imposition of restrictions, all interested parties -- those in support of the restrictions as well as those negatively impacted by the restrictions -- would be coincidentally motivated. All parties

would focus on securing funding rather than the traditional approach where only those injured by the new policies are interested in compensation issues.

4.2.3 Implementation Issues

4.2.3.1 Introduction

Implementation of compatible land uses around Luke AFB involves some guiding principles as well as numerous practical issues. Over the past two decades, the population of the Phoenix Metropolitan area has doubled from 1.6 to over 3 million. This growth has contributed to the change of land uses around Luke AFB from compatible rural uses to increasingly less compatible suburban uses. In order to both preserve mission capability for Luke AFB and still optimize land use around the base, the guiding principle for the implementation focuses on people – minimizing the population density in the relevant compatibility areas surrounding Luke AFB. Minimizing people density serves as a framework for addressing all the compatible land use criteria: safety and noise. The State recognized the necessity of limiting population in the high noise and accident potential zones when it passed ARS §28-8481.

Numerous stakeholders, citizens and political jurisdictions in the West Valley have also recognized the need to address population density and land use intensity in two compatibility areas:

- High Hazard Zone: the Clear Zone, APZ I, and APZ II. The impacts of Luke AFB's operation would limit the types of land use in the area. Existing incompatible land uses would have a high priority for acquisition.
- High Noise Zone: 65 dnl and higher noise contours. This area includes the approach and departure corridors and surrounding lands where there are high noise hazards. A number of strategies will likely be used, including fee simple purchase, purchase / exchange of development rights and rezoning. Retail, industrial and agricultural uses with low population densities are anticipated to be the dominant future uses in this area.

The methods for controlling densities include acquisition of the most critical parcels, possible acquisition or transfer of development rights and a new regulatory outlook by the local political jurisdictions that recognizes the value and risks presented by Luke AFB. Reducing the density in the compatibility areas, either through regulatory control / zoning or through the outright acquisition of property or development rights, means that some communities that are physically impacted by Luke AFB will need to replace present (and planned) single-family residential zoning with low-density agricultural, light industrial and distribution uses. Successful implementation will require the resolution of organizational or administrative structure issues, recognition of equity issues, revision of zoning and permitted land uses, use of incentives and disincentives, and application of new funding mechanisms.

4.2.3.2 Specific West Valley Implementation Issues

- Use available Federal funds to acquire the properties most critically needed to protect Luke AFB's mission.
- Adopt General Plans and zoning regulations in local jurisdictions around Luke that are sensitive to the preservation of the Base's mission.
- Target development of a Regional Employment Center near the I-10 and AZ Route 303 interchange within the Southern Departure Corridor. Because of the growth of the

Southwestern United States, there is market justification for 5,000 to 10,000 acres of regional light industrial and warehouse distribution zoning to accommodate these types of uses over the next 20 to 25 years.

- Combine Federal, State, and local resources to construct transportation routes that support regional economic development.
- Adopt other economic development policies (e.g., creation of Enterprise Zone) to support regional economic growth.

4.2.3.3 Statewide Implementation Issues

- Adopt a Statewide policy of concentrating low-density light-industrial and warehouse distribution uses in areas impacted by military air bases where there is reasonable market potential for such uses.
- Discourage local communities from increasing industrial and distribution zoning in non-impacted areas. Limiting such zoning in non-impacted areas will increase the attractiveness of the properties around the bases.
- Impose an increase in the State-wide sales tax and use the monies collected to: 1) acquire the most critically needed property to protect the mission of such military air bases, 2) acquire the development rights from landowners who wish to continue in agricultural use, and 3) build infrastructure to support distribution and low density employment development within the appropriate portions of the impact areas.

4.2.4 Organizational Issues

The points highlighted above only address one portion, although a key one, of the implementation of compatible land uses around military air bases. The overall issue is more complex due to multiple jurisdictions, numerous stakeholders, and major economic interests. The jurisdictions include Federal, State, and many local jurisdictions in the West Valley. Other stakeholders include landowners, the West Valley residents, the people of Arizona and the tax paying citizens of this country. The economic stakes are substantial given the economic impact of Luke AFB and the potential value of thousands of acres of land impacted by the Base.

There are a number of potential organizational or administrative options that can serve to manage the change of land uses within Luke's influence area. They include a State Agency, an Intergovernmental Agreement or a Special Overlay District. Each has different requirements and faces different challenges.

4.2.4.1 State Agency

The State of Arizona could designate an existing State agency to implement compatible land use around Luke AFB. The agency would add another level of government regulation to the land use in the West Valley and other impacted areas. Since land use regulation has traditionally been a local government prerogative, the designation of a State level agency to challenge this prerogative would likely meet with substantial local level political resistance.

4.2.4.2 Intergovernmental Agreement

The Intergovernmental Agreement (IGA) would be a voluntary but binding agreement or contract among the members / parties. The most significant feature would be that the members are

signing on to specific agreements (regarding roles, responsibilities, and actions) instead of conceding general authority to another entity or a State Agency.

4.2.4.3 A Special Overlay District

A specific Military Airports Overlay District is another organizational option. Clark County, Nevada, which contains Nellis AFB, has a specific Airport Environs Overlay District that helps prevent incompatible uses in the vicinity of Nellis Air Force Base (as well as McCarran International Airport). The Overlay District facilitates compatible uses given airport accident hazards, the handling and transport of live ordnance, and noise exposure areas. However, its central role is to prohibit the development of incompatible uses that would be detrimental to public health, safety, or welfare. The Airport Environs Plan contains policies that discern between allowed uses (minimum requirements for the district) and preferred uses. Although the Airport Environs Overlay District regulations are supplementary to those of the underlying zoning district, they supercede if there is a conflict. In order for this District to be effective, it would have to be adopted by all the political jurisdictions surrounding Luke AFB.

4.2.5 Regional Equity Issues

Luke AFB impacts individual local jurisdictions within the Greater Phoenix metropolitan area in different ways and to different degrees. Luke's physical influence tends to be negative, as a result of safety and noise. The adjacent communities, such as Goodyear, Surprise, El Mirage, and Buckeye shoulder the brunt of these negative impacts. These communities are conflicted because decisions in their self-interest could compromise the ability of Luke AFB to fulfill its mission. At the same time, Luke AFB has a substantial economic impact that largely benefits the region with a focus on Glendale and Phoenix. The economic impact flows from the jobs and income generated and results in retail sales and demand for rental and ownership housing.

Other parties who are impacted include the Federal government, the State government, and private interests. The Federal government benefits since Luke contributes to the defense of the nation. The relocation of Luke AFB's mission would include the replacement of all Luke facilities with a new base or the consolidation and sharing of facilities at another Air Force base. That alternative would have high costs that would be borne by all U. S. taxpayers, including those from the West Valley. In addition, the relocation of Luke's mission would be highly disruptive to its military and civilian employees and their families.

The State of Arizona receives substantial benefits from the Department of Defense's expenditures at Luke AFB for F-16 training as the dollars spent by Luke employees and contractors are re-circulated throughout the economy. Although the benefits would remain largely the same if Luke's operation were relocated within the State, once relocation is under consideration, relocation outside of Arizona is a risk. Arizona would further benefit if Luke were selected as the Joint Strike Fighter training facility as well.

Private interests are also impacted. With the relocation of Luke's operations to another air base, West Valley homeowners, apartment owners, and businesses would be negatively impacted in the short run as home values, apartment values, and business sales fall because of decreased demand. In the long run, many of the negative physical impacts would likely remain because the air base, with its high cost investment in infrastructure, may be converted to use as a civilian airport.

Landowners are another private interest impacted by Luke AFB's operations. They may benefit from higher long term land values due to greater development potential if Luke AFB's operations

were relocated elsewhere. However, in the likely event that the air base would be converted to a civilian airport, the negative impacts would remain or could be even more pronounced.

One of the keys to any successful implementation strategy that serves a variety of interests is that the cost burdens fall in proportion to the benefits received. Like the impact of all large airports, the benefits tend to fall broadly to the nation, state and region. However, much of the burden, specifically of safety and noise, is borne by a more local geographic area. Contributions from the beneficiaries to address the burdens can take different forms. The Federal government has already appropriated money for acquisition of land near Luke AFB. The State government may impose or increase broad-based taxes or fees to shoulder some of the cost burden or use the transfer of development rights to offset losses to the negatively impacted communities.

4.2.6 Zoning and Land Use Issues

Zoning and other forms of land use regulation by local government to prevent incompatible uses are a critical part of implementation. The strongest current market demand for real estate around Luke AFB is for suburban style residential development. Although this type of land use brings the highest price and most immediate sales potential, other economic uses are available. Warehouse / distribution, light industrial, and agriculture uses are all reasonably compatible within the vicinity of Luke AFB, because of their lower people density; and they all constitute economic uses for the property.

In order for Luke AFB to maintain mission capability, people density will need to be minimized in the relevant compatibility areas around the Base. Impacted communities will need to use zoning powers and planning procedures to decrease suburban residential development and higher density employment development and instead promote lower density distribution, light industrial, agricultural, and open space uses.

4.2.6.1 Regional Employment Center

Encouraging low-density light-industrial and employment-related uses in the impact area is an important tactic to optimize land use while striving for maximum mission capability for Luke AFB. The AZ Route 303 / I-10 junction and the AZ Route 303 / Southern Departure area have excellent potential for light industrial, warehouse, and distribution uses.

As the West Valley continues to gain population, there will be growing demand for regional employment-related development. The west side of Phoenix has traditionally been a strong location for distribution facilities because I-10 links this area to the 20 million people who live in Southern California. US Route 93 is in the process of being upgraded to full interstate standards, and a new crossing over Hoover Dam will soon be constructed. These improvements will shorten the time and improve the safety of truck travel from Phoenix and Tucson to the rapidly growing metropolitan areas of Las Vegas and Salt Lake City. The planned AZ Route 303 corridor, which cuts north-south through the West Valley and lies just west of Luke AFB, will connect I-10 and US Route 93.

The Arizona Route 303 corridor, particularly the portion most impacted by Luke AFB near the Southern Departure Corridor, is a logical location for the development of a major economic development center to accommodate the growth of warehouse light-industrial and other low employment density commercial and related commercial land uses. This corridor offers industrial and transportation firms overnight access to 26 million people living in the southwestern portion of the United States. In 20 years, that population will grow to 36 million. Because of this regional access, there is market justification for 5,000 to 10,000 acres of

employment-related zoning in this corridor. The area near the interchange of I-10 and AZ Route 303 and within APZ II is well suited to the development of a Regional Employment Center. This type of development would serve the dual purpose of preserving Luke AFB's mission and accelerating economic development in the West side of the Phoenix Metropolitan Area.

4.2.6.2 Limiting the Growth of Additional Light-Industrial Districts

The value and market absorption of the light-industrial and distribution lands use within this Regional Employment Center will be influenced by the scarcity or abundance of similar uses throughout the region. We recommend the following strategies to accelerate the real estate market acceptance of this District:

- Use a combination of Federal, State, and local resources to construct the local truck routes that support this Regional Economic Development District.
- Adopt other economic development policies (e.g. creation of Enterprise Zone) to support the development of this Regional Economic Development District.
- The State should discourage local communities in the Phoenix metropolitan area from increasing industrial and distribution zoning in non-impacted areas.

4.2.6.3 Agricultural Use

Encouraging the preservation of agricultural uses is another option for maintaining compatible land use around Luke AFB. Maricopa County is one of the most important agricultural regions in Arizona, and local farms grow citrus, melons, vegetables, flowers, and cotton. The region has several advantages: excellent climate, soil, access to water, and a nearly pest free environment. The climate favors year-round crop production. Much of the soil is alluvial, which is conducive to crop growing. The county has excellent access to water with canal service bringing surface irrigation water from the reservoirs along the Salt and Verde Rivers. The high temperatures from June through September (often exceeding 100 degrees Fahrenheit) and the desert environment contribute to a relatively pest-free environment.

Given the advantages that Maricopa County has for agriculture, crop growing remains a viable economic use, particularly in the short term. Some incentives involving lowering the cost of water through subsidies or water guarantees could make continuing agricultural uses more attractive to the current landowners.

4.2.7 Funding Issues

The successful implementation of compatible land uses around Luke AFB will serve a number of interests and the potential funding options include a number of sources. As a principle, the costs for implementation should be in proportion to the benefits.

4.2.7.1 Federal Appropriations

Federal acquisition priorities are to protect land that is the most critical to military operations. The Federal government has already appropriated \$13 million for acquisition of land near Luke AFB. Acquisition by the Federal government follows specific guidelines and the funds will be used for acquisition of land in the most critical areas from a military operations perspective. Other potential funding sources include the Department of Transportation, the Federal Aviation Agency, the Department of Agriculture, the Land and Water Conservation Fund (LWCF), and the

pending Community Character Act. The LWCF can provide matching funds for State land acquisition and conservation and recreation programs.

4.2.7.2 State Funding

State appropriations, another potential source, are politically unlikely in the near term due to current economic conditions and the State Budget deficit. Other State funding possibilities include new taxes or fees, the Arizona Preserve Initiative (API), and State Parks (Growing Smarter Open Space Reserve Program and Arizona Heritage Fund). Any tax increase is unlikely to be popular but possible options include a property tax increase, property transfer tax, or a sales tax increase. The Arizona Department of Transportation could provide funding for infrastructure improvements in AZ-303 / I-10 / Southern Departure Corridor area to accelerate industrial development.

The API in conjunction with the Growing Smarter Open Space Reserve program provides 50 / 50 matching grants (available monies are \$20 million in total per year for eleven years beginning 2001) to purchase or lease State Trust land that has been reclassified for conservation purposes. Legislation could be passed that would allow the Arizona Preserve Initiative to use unused funds to purchase State land for a regional State park in Maricopa County. Up to 10 percent of the \$20 million per year is available under the Growing Smarter Act as grants to individuals who implement practices on their land that preserves open space through the Conservation-Based Agricultural Management Alternatives program. The State Parks Department has a local, regional and State parks grant program that supports land acquisition and development of facilities for outdoor recreation through the Arizona Heritage Fund. The program annually dispenses up to \$3.5 million throughout the State.

4.2.7.3 Local and Private Options

Local funding options include local general funds, voluntary local to local revenue sharing, and funding from the Maricopa County Flood Control District. Local jurisdictions are facing budgetary constraints and have little room in their general funds for acquisition.

Communities could also participate in local-to-local revenue sharing to accomplish shared goals. The Maricopa County Flood Control District may also provide substantial funding for flood control and detention basins since the land on the west side of the Base has some flood control issues. Other State and local options include transfers of land between public agencies and other property exchanges, offering tax abatements, or utilizing a community facilities district.

Private funding source possibilities range from private employers to the Nature Conservancy. Businesses and private groups like the Fighter Country Partnership, Westmarc, and public utilities and other large employers in the greater Phoenix area are some potential sources. The Nature Conservancy, the Trust for Public Land, and the American Farmland Trust may be partners in preserving agricultural and open space. Developers may also be a source of funding.

4.2.8 Safety Issues

Areas around airports are exposed to the possibility of aircraft accidents even with well-maintained aircraft and highly specialized flight crews. Despite stringent maintenance requirements and intense pilot and crew training programs, history demonstrates that aircraft related accidents will occur around airports. Although the risk to people on the ground of being killed or injured by a military aircraft accident is small, such an event is by its nature of high consequence and may be catastrophic in the range and extent impacts, direct or indirect.

In order to address the problem of aircraft accidents, the Department of Defense and the Air Force established three planning zones for military airports: Clear Zone, APZ I, and APZ II. The Department of Defense also identified APZs as a tool to assist local planning agencies in regulating development. Although APZs are areas where an aircraft mishap is most likely to occur if one does occur, these zones do not reflect the totality of the locations where accidents may happen. APZs are based on take-off and landing patterns and were formulated upon analysis of historical data. Approximately 67 percent of the 834 major accidents at U.S. Air Force Bases from 1968 through 1995 occurred in one of these three zones. The remaining 33 percent occurred outside those zones but within ten miles of the associated airfield.

- **Safety Issue #1**

Accidents are more likely to occur in the Clear Zones at the end of the runway.

Response

Limit the types and intensity of use and concentrations of people within the Clear Zone; permit only agricultural uses without structures and underground utilities.

- **Safety Issue #2**

After the Clear Zone, military aircraft accidents are most likely to occur in APZ I and APZ II.

Response

Limit the type and intensity of land uses and concentrations of people in both accident potential zones. Those zones are critical to decreasing the probability of aircraft accidents injuring people and damaging property. They are also critical to increasing the probability that Luke's mission will be preserved and continued.

- **Safety Issue #3**

Accidents may potentially occur in the Approach and Departure Corridors but outside the adjacent APZs. This is particularly important in the Range Access Routes, where aircraft departing for Goldwater Range are carrying live ordnance.

Response

Limit the types and intensity of use within the Range Access Routes in a similar manner as for APZ II, but allow somewhat higher intensity of use. Require a certain percentage / number of low density / low intensity uses of over one hundred acres for emergency landings in the Approach and Departure Corridors. Those uses may be "big box" retail, golf courses, parks, etc.

- **Safety Issue #4**

Accidents may occur in areas under overflight within and outside the Vicinity Box and outside the Approach and Departure Corridors.

Response

Require a certain percentage / number of low density / low intensity uses of over one hundred acres for emergency landings in the areas under the flight tracks.

4.2.9 Noise Issues

Noise at unacceptable levels is a nuisance, unwanted sound that disturbs our routine activities or our peace and quiet. Loud noise can have negative psychological impacts and cause permanent hearing loss. These undesirable sounds frequently cause feelings of mounting annoyance, irritation or anger. The loudness of sounds is dependent upon many factors, including sound

pressure level and frequency content, and within the usual range of environmental noise levels, perception of loudness is relatively predictable. However, which sounds are perceived as noise may vary among listeners and what is not objectionable to some can be bothersome to others. Aircraft noise may be experienced as particularly annoying because its sudden onset may startle people, cause windows to rattle and houses to shake, or cause people to fear a crash. Under such circumstances, even relatively moderate noises increases can be perceived as an annoyance.

In addition to varying levels of annoyance, adverse impacts associated with exposure to moderate and high noise include mental and physiological stress, increased blood pressure, temporary and permanent hearing loss, sleep interruption and deprivation, decreased ability to concentrate, decreased ability to communicate, decreased ability to learn, and behavioral problems in school-age children. Studies determined that at least 75 percent of sleeping people will be awakened if exposed to single-event noises over 74 decibels. Refer to Appendix F for additional information on noise and a detailed bibliography of scientific studies.

In order to deal with noise problems in a logical manner it is necessary to measure it. Sound levels are plotted in units of A-weighted decibels (abbreviated dB, or sometimes dBA), a logarithmic measure of the magnitude of a sound as the average person hears it. The "A-weighting" accounts for the fact that humans do not hear low frequencies and high frequencies as well as they hear middle frequencies. The weighting corrects for the relative efficiency of the human ear at the different frequencies.

One obvious way of describing the sound environment is to measure maximum sound levels, for example, a nearby motorcycle may generate 73 dB. But an aircraft engine sound, although perhaps not perceived as loud as the motorcycle owing to the distance of the observer from the aircraft, tends to last much longer. Since studies have shown that human response to noise involves both the maximum level and its duration, the maximum sound level alone is not sufficient to evaluate the effects of noise on people.

An additional important factor in measuring a sound environment is the occurrence of sound events at night. People are normally more sensitive to intrusive sound events at night and background sound levels are normally lower at night because of decreased human activity. Therefore, a "penalty" may be added to sound levels that occur during night hours. By accepted scientific convention, a 10 decibel penalty is added to sound levels occurring between 10:00 p.m. and 7:00 a.m. the following morning. This 10 dB penalty means that one nighttime sound event is equivalent to 10 daytime events of the same level. The 24-hour average sound level, including the 10 dB penalty, is known as the day-night average sound level (abbreviated dnl). Extensive research has found that the day-night average sound level correlates very well with community annoyance from most environmental noise sources. Refer to Appendix G for additional information on noise.

Relying on a considerable body of scientific research on noise impacts, federal agencies have adopted guidelines for compatible land uses and environmental sound levels. Compatible land uses are normally determined by planning and zoning regulations that segregate types of activities, such as residential, industrial, or commercial. Noise levels that are unacceptable for homes may be quite acceptable for other uses, such as agriculture or certain industries.¹⁸

A measure of noise impact, such as the day-night average sound level, provides a reliable indicator of overall community response but does not indicate how any single individual will respond. As a result, there is probably no minimum level of transportation-related noise at which

¹⁸ The Federal Aviation Administration has issued these guidelines as part of its Airport Noise Compatibility Program, found in Part 150 of the Federal Aviation Regulations.

no one is annoyed. General guidelines for noise compatibility identify day-night average sound levels between 55 and 60 dB as “moderate exposure” and as generally acceptable for residential uses. The Federal Aviation Administration’s Office of Environment and Energy, Noise Division has prepared an Airport Noise Compatibility Planning Toolkit that is designed to aid state and local officials and interested organizations engaged in noise compatibility planning around the nation’s airports.¹⁹ The Land Use Controls and Noise Mitigation section of that report lists residential use as incompatible in the 65 dnl contour and higher. Residential use may be permitted in the 65 to 75 dnl contours only if those uses are classified as “must be allowed” by the governing local jurisdiction.

- **Noise Issue #1**

Individuals regularly and even intermittently exposed to noise levels of 65 dnl and higher may experience a variety of negative physiological and emotional impacts.²⁰

Response

Since exposure to significant noise levels is not compatible with uses that congregate people, the number of uses within the 65 dnl noise contour and higher that congregate people should be minimized.

- **Noise Issue #2**

A number of noise sensitive uses, including schools, churches, hospitals, public assembly, etc. are located within the high noise contours or under heavily used flight tracks.

Response

Restrict noise sensitive uses from locating within the 65 dnl noise contour and higher in the future and work with affected institutions and other public uses to relocate those facilities that are currently in noise-impacted areas.

- **Noise Issue #3**

High single-event military aircraft noise in overflight areas outside the existing Vicinity Box have generated citizen complaints and pressure to modify the Base’s flight operations.

Response

Designate a new noise notification area that is defined by overflights of military aircraft from Luke AFB.

¹⁹ 14 CFR Part 150, Ch. 1 (1-1-98 edition).

²⁰ See: Bronzaft, A.L.; Ahern, K.; McGinn, R.; O’Connor, J.A.; and Savino, B. Aircraft noise: a potential health hazard. *Environ. Behav.* 30:117-132 (1998).

Evans, Gary W.; S. Hygge; and M. Bullinger. Chronic noise and psychological stress. *Psychol. Sci.* 6:333-337 (1995).

Kryter, K.D. Physiological, Psychological and Social Effects of Noise. NASA Reference Publication 1115 (1984).



5 COMPATIBLE LAND USE

5.1 COMPATIBLE LAND USE

The ability of Luke AFB to perform its critical mission today and into the future is related in large part to the compatibility of the land uses in the vicinity with the Base's operations as discussed in Section 3.5. One of the reasons for the original selection of the site for Luke AFB in the West Valley was based on the largely agricultural character of land in the surrounding area. Recognizing that the expansion of the Phoenix metropolitan area into the West Valley is going to continue, it is essential to define land uses that are compatible with the operations of Luke AFB. Compatibility of uses with the operations of Luke AFB with people living, working and playing in the vicinity of the Base is defined by two critical issues: safety and noise.

- Land uses that are noise sensitive are incompatible with high noise zones, which are defined as the 65 dnl contour and higher. Noise-sensitive uses include not only residences, schools / educational institutions, medical facilities nursing homes but also museums / cultural centers, theaters, hotels, outdoor dining, outdoor auditoriums, and concert halls.
- Land uses that result in concentrations of people are inherently incompatible with high hazard zones, which are defined as the Clear Zones, APZ I, and APZ II. Those uses that result in concentrations of people include not only residential but also all uses where people assemble in significant numbers, such as churches, schools, manufacturing with high employment densities, shopping centers, retail establishments, bars and restaurants, hotels, offices, business and government services, sports arenas, and spectator sports.

Each of these critical issues can be translated into geographic areas that are affected by flight operations from Luke AFB. Consequently, this section focuses on defining land uses that are compatible with the operation of Luke AFB within the noise and hazard zones as defined by Arizona Statute.²¹

Table 5-1 presents compatible land uses for areas within the high hazard zones and the 65 dnl noise contour and higher. Uses that result in concentrations of people are restricted in the high hazard zones, Clear Zones, APZ I, and APZ II, while noise-sensitive uses are restricted in noise zones of 65 dnl noise contour and higher.

²¹ See ARS §28-8461.

Table 5-1: Compatible Land Uses

Use	Clear Zone	APZ I	APZ II	65 – 69	70 – 74	75 – 80	80+
Agriculture (limited to row crops only, with no structures or live stock)	Y	Y	Y	Y	Y	Y	Y
General Agriculture/Livestock (excluding accessory retail sales)	N	Y	Y	Y	Y	Y	Y
Agricultural processing and services	N	Y ¹	Y ¹	Y ²	Y ²	Y ²	Y ²
Residential	N	N	N	N	N	N	N
Schools	N	N	N	N	N	N	N
Cultural Activities and Churches	N	N	N	N	N	N	N
Medical Facilities, including Hospitals, Clinics, Extended Care Facilities and Nursing Homes	N	N	N	N	N	N	N
Public Assembly, including auditoriums, stadiums, and amphitheaters	N	N	N	N	N	N	N
Retail Sales	N	N	N	Y ²	Y ²	Y ²	N
Restaurants, Eating and Drinking Establishments	N	N	N	Y ²	Y ²	Y ²	N
Lodging	N	N	N	N	N	N	N
Business, Personal and Professional Services, including General Offices	N	N	N	Y ²	Y ²	Y ²	N
Wholesale Trade and Distribution	N	Y ¹	Y ¹	Y ²	Y ²	Y ²	Y ²
Manufacturing and Industrial Processing, except Chemical, Petroleum, Rubber & Plastics, and Professional and Scientific Equipment	N	Y ¹	Y ¹	Y ²	Y ²	Y ²	Y ²
Chemical, Petroleum, Rubber & Plastics Manufacturing and Processing	N	N	N	Y ²	Y ²	Y ²	Y ²
Professional and Scientific Equipment Manufacturing	N	Y ¹	Y ¹	Y ²	Y ²	Y ²	N
Rail Lines and Roadways	N	Y	Y	Y	Y	Y	Y
Vehicle Parking	N	Y	Y	Y	Y	Y	Y
Communications Facilities and Utilities	Y ³	Y ¹	Y ¹	Y	Y ²	Y ²	Y ²
Cemeteries (not including Chapels)	N	N	Y	N	N	N	N
Government Services (not including outdoor Public Service Facilities)	N	N	N	Y ²	Y ²	Y ²	N
Educational Facilities	N	N	N	N	N	N	N
Outdoor Recreation (including places for people to gather, such as picnic areas, swimming pools, playgrounds, etc.)	N	N	N	N	N	N	N
Outdoor Recreation (not including places for people to gather), such as golf courses, hiking, riding, nature areas, etc.)	N	Y	Y	Y	Y	Y	Y
Indoor Recreation (including clubhouses, swimming pools, etc.)	N	N	N	Y ²	Y ²	Y ²	N
Resorts and Group Camps	N	N	N	N	N	N	N

Notes:

1. Subject to limitations on density / intensity of use
2. With appropriate sound attenuation and no outdoor food service
3. Below-ground facilities only

5.2 COMPATIBLE LAND USE PLAN

The Compatible Land Use Plan is structured into seven separate zones. These zones are based on the high hazard and noise zones established in the AICUZ Program guidance and by ARS §28-8481. The Plan resolves inconsistencies and contradictions within and between the AICUZ Program guidance and ARS §28-8481. The Compatible Land Use Plan is a guide and a tool to be applied by local political jurisdictions with properties within the high hazard and noise zones associated with Luke Air Force Base to protect and promote the health, welfare and safety of the public.²² Integration of these land uses into general and comprehensive plans during the Growing Smarter major amendment process is appropriate implementation. The Compatible Land Use Plan map is presented on Figure 5-1.

Given that Arizona is a local control State, it is the obligation of each community to determine which of the uses in the Compatible Land Use Plan are appropriate for each jurisdiction.

This Plan does not address land uses outside the high hazard and noise zones associated with Luke Air Force Base. It is recommended that public health and welfare issues would be best served if:

- Local jurisdictions plan for compatible uses in areas lying within the 55 dnl to 64 dnl noise contours. Scientific research has documented that continued and long-term exposure to noise at these levels is detrimental to learning, physical and emotional health.
- Local jurisdictions plan for compatible uses under the Range Access Routes between Luke AFB and the military ranges in consideration of military aircraft carrying live ordnance.

²² Uses not listed are incompatible and should not be permitted.

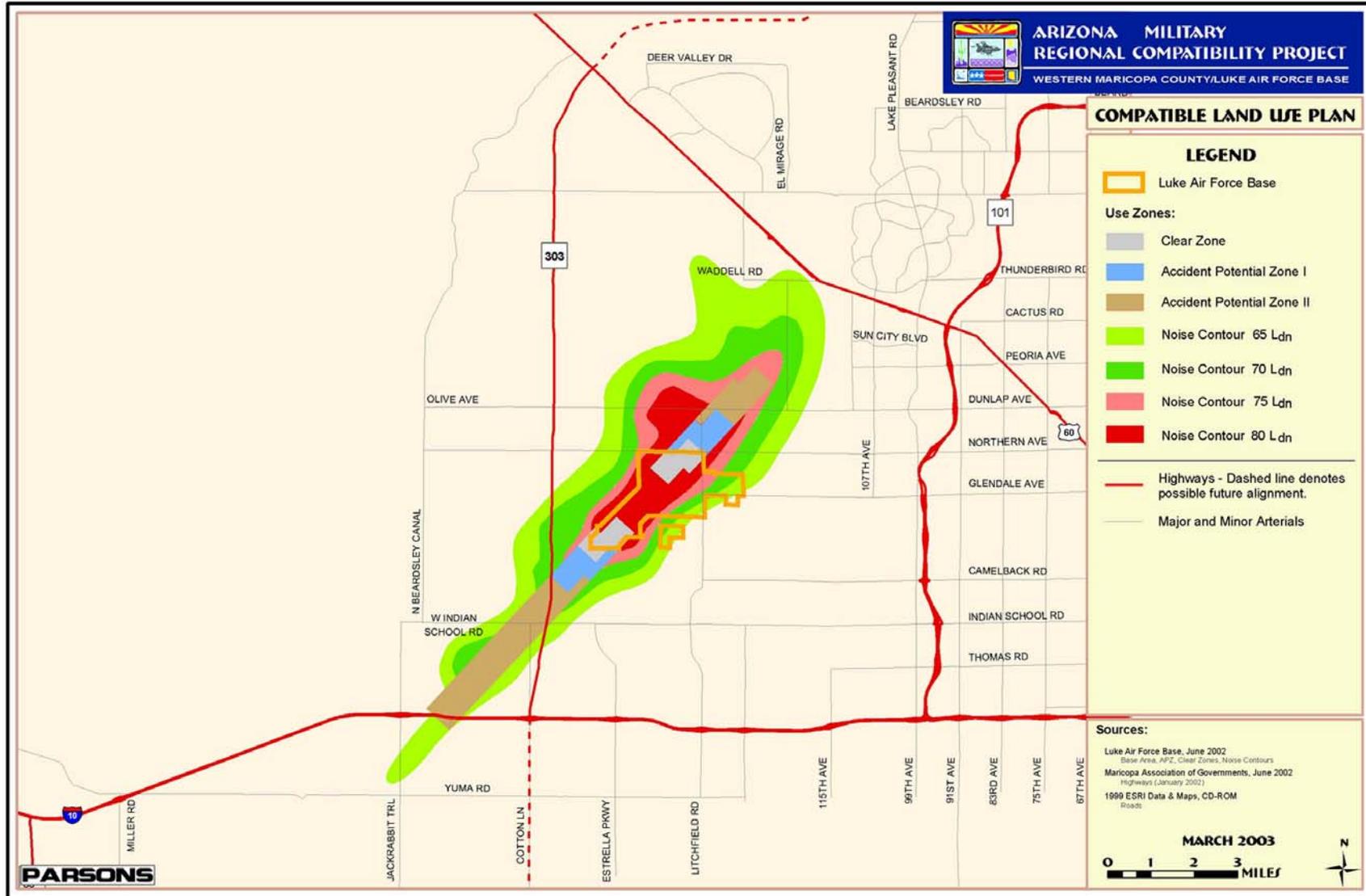


Figure 5-1: Compatible Land Use Plan

5.2.1 Clear Zone

Compatible Uses

- Agriculture (limited to row crops only that do not attract birds, with no structures or livestock)
- Communications Facilities and Utilities (below ground only)

5.2.2 Accident Potential Zone-I (APZ I)

Compatible Uses

- General Agriculture / Livestock (excluding accessory retail sales)
- Agricultural processing and services, subject to limitations on intensity of use (see Use Standards below)
- Wholesale Trade and Distribution, subject to limitations on intensity of use (see Use Standards below)
- Manufacturing and Industrial Processing, except Chemical, Petroleum, Rubber & Plastics, and Professional and Scientific Equipment, subject to limitations on intensity of use (see Use Standards below)
- Rail Lines and Roadways
- Vehicle Parking
- Communications Facilities and Utilities, subject to limitations on intensity of use (see Use Standards below)
- Outdoor Recreation (not including places for people to gather, such as picnic areas, swimming pools, playgrounds, etc.): examples of permitted uses include golf courses without club houses and parks / nature trails without museums or exhibits

Recommended Intensity of Use Standards

- Intensity of Use: Not to exceed one employee per 8,000 sq. ft. net lot area²³
- Lot Size: Minimum net lot area shall be not less than 400,000 sq. ft.
- Lot Coverage: Maximum lot coverage shall be twenty-five percent of the net lot area

5.2.3 Accident Potential Zone-II (APZ II)

Compatible Uses

- General Agriculture / Livestock (including accessory retail sales)
- Agricultural processing and services, subject to limitations on intensity of use (see Use Standards below)
- Wholesale Trade and Distribution, subject to limitations on intensity of use (see Use Standards below)

²³ Defined as the total lot area minus that part of the property dedicated to public right-of-way.

- Manufacturing and Industrial Processing, except Chemical, Petroleum, Rubber & Plastics, and Professional and Scientific Equipment, subject to limitations on intensity of use (see Use Standards below)
- Professional and Scientific Equipment Manufacturing, subject to limitations on intensity of use (see Use Standards below)
- Rail Lines and Roadways
- Vehicle Parking
- Communications Facilities and Utilities, subject to limitations on intensity of use (see Use Standards below)
- Cemeteries (not including chapels or offices)
- Outdoor Recreation (not including places for people to gather, such as picnic areas, swimming pools, playgrounds, etc.): examples of permitted uses include golf courses without club houses and parks / nature trails without museums or exhibits

Recommended Intensity of Use Standards

- Intensity of Use: Not to exceed one employee per 5,000 sq. ft. net lot area
- Lot Size: Minimum net lot area shall be not less than 200,000 sq. ft.
- Lot Coverage: Maximum lot coverage shall be thirty percent of the net lot area

5.2.4 65-69 dnl Contour Zone²⁴

Compatible Uses

- General Agriculture / Livestock (including accessory retail sales)
- Agricultural Processing and Services
- Retail Sales
- Restaurants, Eating and Drinking Establishments with no outdoor food service
- Business, Personal and Professional Services, including General Offices
- Wholesale Trade and Distribution
- Manufacturing and Industrial Processing, except Chemical, Petroleum, Rubber & Plastics, and Professional and Scientific Equipment
- Chemical, Petroleum, Rubber & Plastics Manufacturing and Processing
- Professional and Scientific Equipment Manufacturing
- Rail Lines and Roadways
- Vehicle Parking
- Communications Facilities and Utilities

²⁴ Uses located within the high noise zones, 65 dnl noise contour and higher, must meet the noise attenuation standards established in ARS §28-8482.

- Government Services (not including outdoor Public Service Facilities)
- Outdoor Recreation (not including places for people to gather, such as picnic areas, swimming pools, playgrounds, etc.): examples of permitted uses include golf courses without club houses and parks / nature trails without museums or exhibits
- Indoor Recreation (including clubhouses, swimming pools, etc.)

5.2.5 70-74 dnl Contour Zone

Compatible Uses

- General Agriculture / Livestock (including accessory retail sales except where prohibited)
- Agricultural Processing and Services
- Retail Sales
- Restaurants, Eating and Drinking Establishments with no outdoor food service
- Business, Personal and Professional Services, including General Offices
- Wholesale Trade and Distribution
- Manufacturing and Industrial Processing, except Chemical, Petroleum, Rubber & Plastics, and Professional and Scientific Equipment
- Chemical, Petroleum, Rubber & Plastics Manufacturing and Processing
- Professional and Scientific Equipment Manufacturing
- Rail Lines and Roadways
- Vehicle Parking
- Communications Facilities and Utilities
- Government Services (not including outdoor Public Service Facilities)
- Outdoor Recreation (not including places for people to gather, such as picnic areas, swimming pools, playgrounds, etc.): examples of permitted uses include golf courses without club houses and parks / nature trails without museums or exhibits
- Indoor Recreation (including clubhouses, swimming pools, etc.)

5.2.6 75-79 dnl Contour Zone

Compatible Uses

- Agriculture (limited to row crops only, with no structures or livestock)
- General Agriculture / Livestock (including accessory retail sales except where prohibited)
- Agricultural Processing and Services
- Retail Sales
- Restaurants, Eating and Drinking Establishments with no outdoor food service
- Business, Personal and Professional Services, including General Offices

- Wholesale Trade and Distribution
- Manufacturing and Industrial Processing, except Chemical, Petroleum, Rubber & Plastics, and Professional and Scientific Equipment
- Chemical, Petroleum, Rubber & Plastics Manufacturing and Processing
- Professional and Scientific Equipment Manufacturing
- Rail Lines and Roadways
- Vehicle Parking
- Communications Facilities and Utilities
- Government Services (not including outdoor Public Service Facilities)
- Outdoor Recreation (not including places for people to gather, such as picnic areas, swimming pools, playgrounds, etc.): examples of permitted uses include golf courses without club houses and parks / nature trails without museums or exhibits
- Indoor Recreation (including clubhouses, swimming pools, etc.)

5.2.7 80 dnl and Higher Contour Zone

Compatible Uses

- Agriculture (limited to row crops only, with no structures or livestock)
- General Agriculture / Livestock (including accessory retail sales except where prohibited)
- Agricultural Processing and Services
- Wholesale Trade and Distribution
- Manufacturing and Industrial Processing, except Chemical, Petroleum, Rubber & Plastics, and Professional and Scientific Equipment
- Chemical, Petroleum, Rubber & Plastics Manufacturing and Processing
- Rail Lines and Roadways
- Vehicle Parking
- Communications Facilities and Utilities
- Outdoor Recreation (not including places for people to gather, such as picnic areas, swimming pools, playgrounds, etc.): examples of permitted uses include golf courses without club houses and parks / nature trails without museums or exhibits



6 IMPLEMENTATION PROGRAM

6.1 INTRODUCTION

This Compatibility Plan will guide the State of Arizona in the decisions it makes to preserve the mission of Luke AFB. The State will be the convener and facilitator of programs that preserve the mission of Luke AFB, working in cooperation with the Base, local jurisdictions and private interests within the area influenced by the operations of Luke AFB.

This implementation program has been developed in recognition of the ongoing planning by the Base and jurisdictions, and considering the divergent viewpoints expressed as part of the public outreach process, and the need to present strategies that realistically accomplish the goal of preserving Luke AFB and its mission. While the changing nature of economics and politics may change the scope and timing of the implementation strategies, this Plan provides the framework and guidance for achieving long term compatibility of development with the Base and its mission.

The following sections present the recommended Implementation Strategies. Following a brief description of each strategy are three aspects of implementation that are integral to the process. The first aspect of implementation, **Priority / Timing**, establishes the importance of the action and the time frame within which the Strategy is to be effected:

- High – within 0-1 year from June 2003
- Moderate – within 2-3 years
- Low – 4-5 years

The second aspect of implementation, **Responsible Party(s)**, indicates the governmental agency, local political jurisdiction and other parties responsible for implementing the Strategy. The third aspect of implementation, **Evaluation Measures**, presents recommendations concerning review and monitoring to facilitate adjustments if the strategy is not meeting its desired results. The appropriate role for the State would be to monitor the implementation and effectiveness of the recommended measures through a specific State agency or standing committee.

6.2 IMPLEMENTATION STRATEGIES

6.2.1 Landowner Compensation

Measures to compensate landowners for property found to be incompatible with preserving the mission of Luke AFB should be developed simultaneously or even prior to the application of various regulations to control or to limit land use and development around the Base. An effective approach might be to condition the implementation of land use restrictions on the identification and securing of adequate compensation for economic losses resulting from imposition of the new restrictions. By requiring compensation to precede the imposition of restrictions, all interested parties -- those in support of the restrictions as well as those who oppose the restrictions -- would be motivated simultaneously. All parties would focus on securing compensation first rather than the traditional approach wherein those injured by imposition of new policies immediately pursue appropriate compensation.

- Priority / Timing – High
- Responsible Party(s) – Federal government, State government, and local jurisdictions
- Evaluation Measures – Funding and compensation measures start in 2004 and are fully available to compensate affected land owners by June 2008

6.2.2 Department of Defense Land Acquisition

The Department of Defense should purchase and retain critical areas around the Base, especially the Clear Zone and the safety zone around the munitions storage area.

Roadways that intrude into the Clear Zone should be relocated outside that zone.

- Priority / Timing – High for the clear zone and moderate to low for the APZs
- Responsible Party(s) – Federal government
- Evaluation Measures – Clear zone lands are purchased or easements in place that control uses by June 2005

6.2.3 Fee Simple Land Acquisition

Purchase lands in the Clear Zones and the APZs to assure compatible uses.

- Priority / Timing – High
- Responsible Party(s) – Federal government, State government, and local jurisdictions
- Evaluation Measures – Clear zone lands are purchased or easements in place that control uses by June 2005

6.2.4 Purchase / Lease Back Program

Purchase agricultural lands around the Base that are most directly impacted by safety, or noise considerations and lease properties back to farmers who will use them for agricultural purposes.

- Priority / Timing – Moderate
- Responsible Party(s) – Local jurisdictions
- Evaluation Measures – Purchase and lease back programs are available by June 2006

6.2.5 Purchase of Development Rights²⁵

Local political jurisdictions can create incentives for developers to reduce the intensity and density of use in areas identified as significant to preserving the Base's mission while increasing density in other areas by encouraging the purchase of development rights in appropriate situations and areas. When development rights are purchased, a landowner is paid a fair market value for the rights that are purchased. The value of the purchased rights is roughly equal to the value of the land without any special restriction less the value of the land with the land use restrictions.

²⁵ The term development rights also means density rights for this document (Appendix H).

- Priority / Timing – Moderate
- Responsible Party(s) – Local jurisdictions
- Evaluation Measures – Programs among three or more of the affected jurisdictions are in place by June 2006

6.2.6 Transfer of Development Rights

Reduce the intensity and density of use in areas identified as significant to preserving the Base's mission while increasing density in other areas by encouraging local political jurisdictions to create incentives for developers to use the density transfer technique in appropriate situations and areas in proximity to the Base. The transfer of development rights is similar to the purchase of development rights, except rather than paying cash for development rights, the landowner is compensated by having the permitted uses of other land, owned by the landowner, expanded. For example, the uses of an acre of land currently zoned for agricultural purposes outside the APZs would be modified to include higher density residential development at the same time the use of the acre of land in the APZs currently zoned to permit single-family residential development would be restricted to agricultural uses. As a consequence, there would be no out of pocket cost for the imposition of limitations on the land in the APZ.

- Priority / Timing – Low
- Responsible Party(s) – Local jurisdictions
- Evaluation Measures – Programs are in place in all affected West Valley jurisdictions by June 2005

6.2.7 Compensation Priorities

The priority for the purchase of land or development rights in the compatibility area around Luke AFB is in direct relation to the location of the properties within the high hazard and high noise zones. The priority areas are: First - Clear Zone, second - APZ I, third - APZ II, fourth - 80 dnl and higher noise contour, fifth - 75 dnl through 79 dnl noise contours, sixth - 70 dnl through 74 dnl noise contours, and seventh - 65 dnl through 69 dnl noise contours. These priorities may be modified based on extenuating circumstances.

- Priority / Timing – High
- Responsible Party(s) – Federal government, State government, and local jurisdictions
- Evaluation Measures – Ongoing – Compensation is allocated by priority

6.2.8 Partnerships with Non-Governmental Organizations to Facilitate Transfers of Development Rights

Governmental or non-governmental entities such as the Trust for Public Land, may acquire development rights for land adjacent to Luke AFB, especially for parcels in the high hazard and noise zones, and dedicating it to uses compatible with Luke's military mission or to transferring those lands to public ownership for conservation or open space uses.

- Priority / Timing – Low
- Responsible Party(s) – State government, local jurisdictions and conservation groups

- Evaluation Measures – Transfer of Developments Rights program(s) should start by 2004, and be in place by June 2008

6.2.9 Land and Water Conservation Fund

The Land and Water Conservation Fund (LWCF) was established by Congress in 1964 to create parks and open spaces, protect wilderness, wetlands, and refuges, preserve wildlife habitat, and enhance recreational opportunities. The LWCF has a matching grants program that provides funds to states for planning, developing and acquiring land and water areas for state and local parks and recreation areas. These funds could be used to match state monies to purchase critical parcels of land around Luke AFB for use as conservation / open space.

- Priority / Timing – High
- Responsible Party(s) – Federal and State governments
- Evaluation Measures – Use of land and water conservation funds as appropriate

6.2.10 Adoption of the Compatible Land Use Plan

Each local political jurisdiction in the West Valley, any part of which lies within the recommended Compatible Land Use Plan (Figure 5-1), should update their General Plan and ordinances, through the appropriate Growing Smarter amendment processes, in compliance with the Plan identified herein.

- Priority / Timing – High
- Responsible Party(s) – Affected West Valley jurisdictions
- Evaluation Measures – Compliance by December 2004

6.2.11 Statewide Property Transfer Tax

Implementation of this strategy would create a State-wide tax that would be collected on every property transfer as specified. The tax could be applied to all property sales in the State or could be restricted to the sale of certain classes of property, such as all non-residential and non-institutional properties. This tax could function as a potential funding tool with regard to land acquisition and land owner compensation for properties whose use is identified as incompatible to Luke's mission.

- Priority / Timing – Low
- Responsible Party(s) – State government
- Evaluation Measures – Implementation by June 2008

6.2.12 State Sales Tax

A one-half percent increase in the Arizona state sales tax would add 2.5 cents to a \$5 purchase and \$5 to a \$1,000 purchase. The proceeds of such a tax could be dedicated to the purchase of land or development rights surrounding military facilities or for purchase of lands to preserve open space. A one-half percent increase in the State sales tax on retail sales would generate slightly less than \$200 million per year based on FY 2002 activity levels. This increase could be

imposed for a specified period of time or could be eliminated after reaching a previously established budget amount. The monies collected through this increase would be applied to purchasing land with incompatible uses encroaching on military bases throughout the State or the purchase of development rights to prevent future incompatible uses in such areas. In those counties without an active military facility, the collected funds could be used for acquisition and preservation of open space.

- Priority / Timing – Low
- Responsible Party(s) – State government
- Evaluation Measures – Implementation by June 2008

6.2.13 Focus on Regional Employment-Related Uses

Assuming a reasonable regional market demand, the State of Arizona should consider adopting a policy of concentrating low density light-industrial and employment-related uses in land areas impacted by military air bases. This policy shifts these types of uses to lands impacted by noise and safety issues that have fewer options and preserves other lands for alternate uses. The steps involved would include:

- Identifying and formally designating the areas that are impacted by military airfields and have potential for light industrial and employment-related development.
- Discourage local communities from increasing light-industrial and employment-related zoning in non-impacted areas.
- Impose an increase in the State-wide sales tax and use the monies collected to:
 - Acquire the most critically needed property to protect the mission of such military air bases.
 - Acquire the development rights from landowners who wish to continue in agricultural use.
 - Build infrastructure to support light-industrial and low density employment development within the appropriate portions of the impact areas.
- Priority / Timing – Low
- Responsible Party(s) – State government and local jurisdictions
- Evaluation Measures – Ongoing

6.2.14 Desert / Open Space / Agricultural Uses

Designate land for desert, open space or agricultural uses compatible with the operation of the military installation. This Strategy would be used in conjunction with one or more strategies listed in this Chapter with regard to fee simple land purchase, purchase of development rights, or transfer of development rights. One or more national conservation groups, such as the Trust for Public Lands, may participate in this Strategy.

- Priority / Timing – Moderate
- Responsible Party(s) – Local jurisdictions
- Evaluation Measures – Compliance by June 2005

6.2.15 Range Access Routes

Jurisdictions under a range access route should adopt plans and regulations that limit the density and intensity of land uses in the live ordnance overflight areas, especially residential and other uses that concentrate population.

- Priority / Timing – High
- Responsible Party(s) – Local affected jurisdictions
- Evaluation Measures – Plans and regulations in place by December 2004

6.2.16 West Valley Compatibility Notification Area

Implement the recommended West Valley Compatibility Notification Area (Figure 6-1) that is bound on the north by an east-west line that includes State Route 74 / Carefree Highway. The western border would be a line extending from the intersection of W. Salome Highway / Old U.S. 80 straight north to line extending west from State Route 74 / Carefree Highway. The southern boundary would be a line extending from Elliot Road on the south to the intersection of W. Salome Highway / Old U.S. 80. The eastern boundary would be a line extending from the eastern border of the existing Vicinity Box to 59th Avenue north to Carefree Highway / Route 74 and from the eastern border of the existing Vicinity Box to Litchfield Road south to Elliot Road.

Note: In February 2003, the Fighter Country Coalition recommended boundaries for an expanded notification area extending to the Maricopa County boundaries on the east, north and south and 51st Avenue on the east.

Any community outside those boundaries may adopt a similar notification standard if they believe it benefits their citizens.

- Priority / Timing – High
- Responsible Party(s) – State government and local jurisdictions
- Evaluation Measures – Notification procedures in place by December 2004

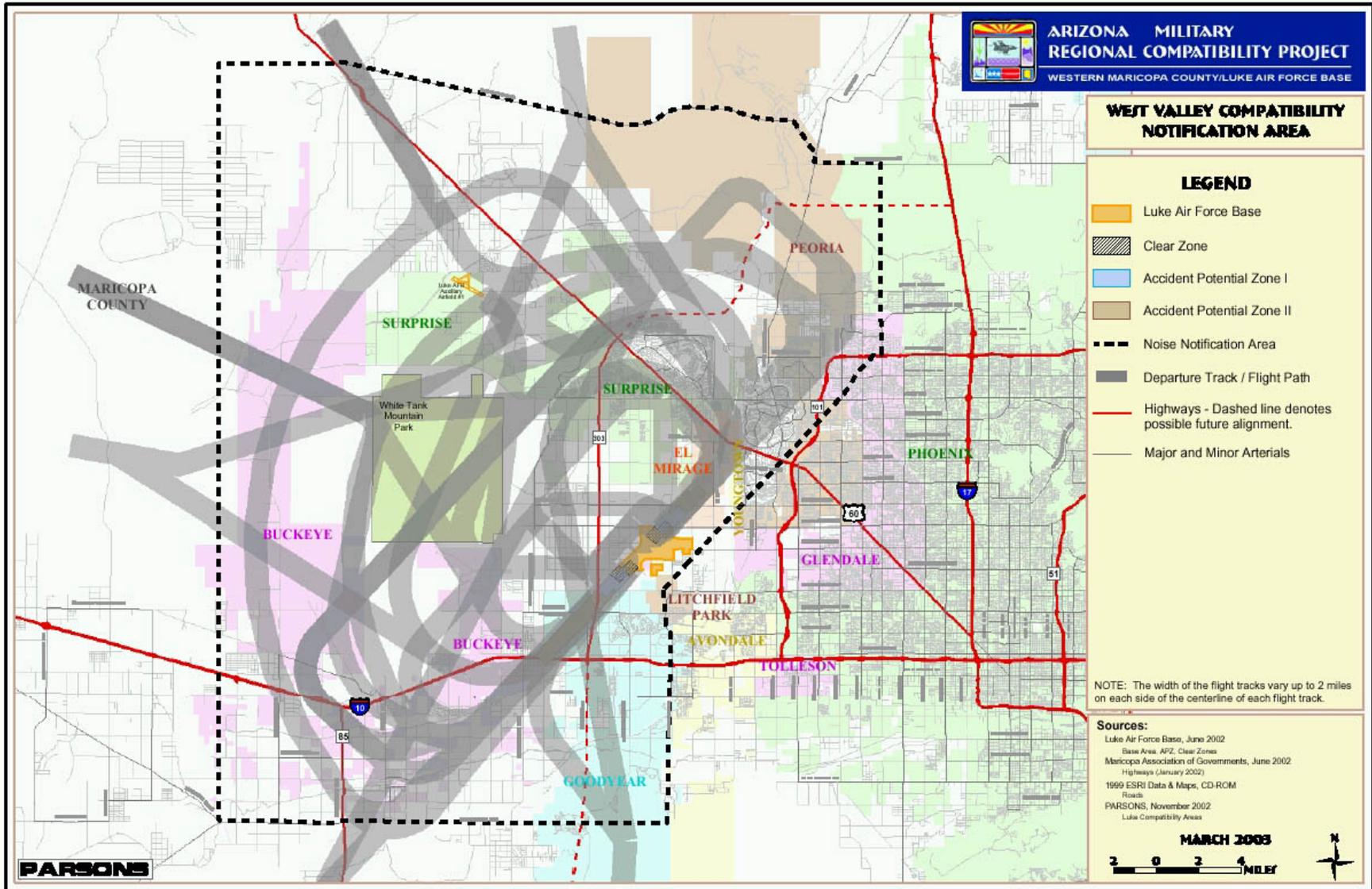


Figure 6-1: West Valley Compatibility Notification Area

6.2.17 Coordination Between Jurisdictions and Luke AFB

Efficient and effective communication between jurisdictions and Luke AFB during the development application process must address critical safety and noise concerns, provide for consistency over time (i.e., transcend changes in Base command or in local jurisdictions) and among jurisdictions, clarify expectations for all parties as to the development review process for applications in the Vicinity Box by setting mutually agreeable standards, and must comply with State legislation.

- Priority / Timing – High
- Responsible Party(s) – Luke AFB and local jurisdictions
- Evaluation Measures – Ongoing

6.2.18 Model Ordinance for Development Review

ARS §28-8461 requires that all Arizona communities having jurisdiction over properties that fall within high noise and safety hazard areas associated with military airports shall consult, advise, and provide the opportunity for official comment in general plan amendments, rezoning, and subdivision approvals. The Model Ordinance for Development Review Process in Appendix I may be adapted to assist those communities impacted by the high noise and accident potential zones of Luke AFB in complying with Arizona law. This model ordinance is based on the requirements of the statute and draws on a variety of specific example components already in place in the City of Glendale, the City of Goodyear, Maricopa County, and the City of Surprise.

- Priority / Timing – High
- Responsible Party(s) – Luke AFB and local jurisdictions
- Evaluation Measures – All jurisdictions within the Vicinity Box adopt the model ordinance by April 2004

6.2.19 Best Practice Techniques

Determine and assess the usefulness of various techniques used by other political jurisdictions with similar military air base encroachment issues to guide development around military bases. Identify and evaluate “best practice” techniques for their potential to be adapted to the needs of various West Valley political jurisdictions. The State will continue its role as convener and clearinghouse in these efforts. Other stakeholders are anticipated to participate in this data collection in support of the statewide effort. Results of the Best Practices research will be compiled into the State Policy Guide developed as part of the statewide effort to address land use compatibility and encroachment issues.

- Priority / Timing – Low
- Responsible Party(s) – State government, local jurisdictions, and other stakeholder groups
- Evaluation Measures – Ongoing

6.2.20 State Efforts to Preserve Military Facilities from Encroachment

Establish a strong military affairs presence in the Governor's Office and military-related planning and economic development efforts within the Arizona Department of Commerce.

- Priority / Timing – High
- Responsible Party(s) – State government
- Evaluation Measures – Military affairs position by June 2004

6.2.21 Signs in the West Valley Compatibility Area

Local jurisdictions should require developers and homebuilders in areas that have been identified as impacted by noise and safety considerations to attach permanent notification signs to subdivision street signs or to post free-standing signs alerting people that they live in or may be buying homes in Aircraft Overflight Areas, High Noise Zones, etc.

- Priority / Timing – Moderate
- Responsible Party(s) – Local jurisdictions
- Evaluation Measures – Implemented by June 2008

6.2.22 Noise Sensitive Uses outside the High Noise Contours

Local jurisdictions should plan for low density residential and other noise sensitive uses in areas lying within the 55 dnl to 64 dnl noise contours and under the Range Access Routes. Continued and long-term exposure to noise at those levels has been demonstrated by scientific research to be detrimental to learning and physical and emotional health.

To accomplish this Strategy, it is necessary for Luke AFB to map the 55 dnl and 60 dnl noise contours as well as the Range Access Routes and make those maps available to the Arizona Department of Commerce and local jurisdictions for planning purposes.

- Priority / Timing – Low
- Responsible Party(s) – Local affected jurisdictions and Luke AFB
- Evaluation Measures – Adoption of plans by June 2008

6.2.23 Sunset Provision

Air Force Bases are by their nature finite facilities. They are created, function for a period and at some point in time are decommissioned. If Luke AFB ceases to function as an active military installation, regulations and ordinances promulgated by local jurisdictions and State laws relating to the use and development of land in the vicinity of a military airport should be removed officially from enforcement so that future development does not have to meet restrictions based on prior conditions that no longer exist.

- Priority / Timing – Low
- Responsible Party(s) – Local jurisdictions
- Evaluation Measures – Within 4 years if the base closes

6.2.24 Arizona Military Airport Preservation Committee

Arizona Military Airport Preservation Committee should play a continuing and active role in implementation of this Compatibility Plan and in the preservation of military airports and property rights of owners in the vicinity of military facilities. Implementation of this Land Use Compatibility Plan may be a function of this standing committee.

- Priority / Timing – High
- Responsible Party(s) – State government
- Evaluation Measures – Ongoing

6.2.25 Amend ARS §28-8481

The State should amend the table of uses permitted in the high noise and accident potential zones that is defined in ARS §28-8481 to be consistent with the recommended compatible land uses listed in Table 5-1, Compatible Land Uses within the High Noise and Hazard Zones.

- Priority / Timing – High
- Responsible Party(s) – State government
- Evaluation Measures – Compliance by June 2005